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IN THE MID-WEST**

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VII RADIO IN STATE AND TERRITORIAL EDUCATIONAL
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VIII RADIO EDUCATION PIONEERING IN THE MID-WEST.
(*Albert Reed*)

In Preparation

IX STUDENT OPERATION OF A COMMERCIAL RADIO
STATION. (*Storm Whaley*)
X RADIO DEVELOPMENT IN A SMALL CITY SCHOOL
SYSTEM. (*Lola Berry*)

RADIO EDUCATION PIONEERING IN THE MID-WEST

By
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VIII



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*A Radio-Education Book Dedicated to
the Late
CHARLES WILLIAM TAYLOR
for Sixteen Years
State Superintendent of Public Instruction*

and to

SARAH ELIZABETH WERT TAYLOR

My Friends and Classmates — Loyal
Nebraskans Who Have Not Missed a
Class Reunion of the "Famous Class
of 1898" the Only University of
Nebraska Class That Has Never
Failed to Have an Annual Round-up.

—A. A. REED.

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—A. A. REED.

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EDITORIAL INTRODUCTION

Radio has not been the specialized field of the author of this volume. However, very few other educators in the Mid-West have had such a "grand-stand seat" for observing the trials-and-errors, successes and failures in the pioneer efforts to use radio as an educational tool in his own and neighboring states. Thus, Dr. Albert Alison Reed, Director-Emeritus of the University of Nebraska Extension Division, and later the Deputy Superintendent of Public Instruction for his adopted state, records in *Radio Education Pioneering in the Mid-West* the experimentation as he actually saw it develop.

Dr. Reed was born in Indiana County, Pennsylvania, but started his professional career as a ward principal in Beatrice, Nebraska, in 1886. Later, he served as principal or superintendent, respectively, in Odell, Gage County Schools, Crete, and Superior. From 1907 to 1941 he served as Professor of Secondary Education and Director of the Extension Division, University of Nebraska . . . and now holds title of Emeritus in both these positions. Active in important national and state organizations, Dr. Reed has grown up as a Cornhusker where he has seen Nebraska's educational growth almost from its infancy to date.

The actual introduction to radio education of the author of this book came on May 1, 1922, when he was in charge of a broadcast directed to the Wahoo High School as presented by Dean O. J. Ferguson of the University's College of Engineering. Thereafter, from February to August, 1923, the University programs were broadcast under Dr. Reed's direction, and he continued to be responsible for them from September 15, 1923, until September, 1937.

—CARROLL ATKINSON, *Director,
Hattie and Luther Nelson Memorial Library.*

RADIO EDUCATION PIONEERING
IN THE MID-WEST

Radio Education Pioneering In The Mid-West

FOREWORD

In the Mid-West, more than in any other section in the United States, radio has belonged to the people. The densely populated East has seemed to lack this same intense early interest—the commercial motive, apparently, dominating the situation almost from the beginning. In the Southern, Rocky Mountain, and Pacific Coast sections of this nation there was some early interest on the part of educators, but, this interest did not seem to go so far or to last as long. The agricultural Mid-West, definitely down-to-earth, experimented very early . . . and has continued to maintain much of that pioneer interest to the present time.

Why, one may ask, has the Mid-West been such especially fertile soil for this pioneering in the educational possibilities of radio? The answer probably lies in the great distances over which settlements extend, the spirit that has made for rapid development in most forms of education, the boundless enthusiasm of healthy people accustomed to wrest their hard-earned livings from the soil—these, and many similar factors, have contributed to the Mid-West interest in the startling new means of communication introduced into the world just prior to the beginning of the Twentieth Century.

The lonesomeness of prairie home life welcomed this newly discovered “magic” as a promising means

of bringing communities into closer contact, not only for purposes of entertainment, but also as a means of meeting unexpected emergencies. Blizzards, that previously had stopped all forms of intercommunication, now found a master. For example, on Easter morning shortly after radio had begun to get established in the American home, Lincoln, Nebraska, was cut off from the rest of the world. Trains could not move, telegraph lines were rendered useless by crushing masses of ice—the city and surrounding area were isolated except for the voice of radio, which could reach the outside world. Locally, children were asked not to come to school in both urban and rural areas. Who knows how many tragedies that may have been averted in the over-zealousness of children anxious to keep perfect attendance records, trudging to classroom through blinding snow only to find empty buildings. This is only one example of the many emergencies that have been met or forestalled by radio—emergencies as they affect the American school child.

Radio has many other possibilities than that of meeting emergencies. Regularly on schedule, during the school-day afternoon, in hundreds of Wisconsin classrooms, children habitually lay aside their other work and, under their own teacher's direction, prepare for a radio music lesson that brings into the most humble and isolated of Wisconsin rural classrooms the best available instruction of a highly experienced and talented teacher. By the simple turning of the dial on the receiving set there comes the announcement, "The *Wisconsin School of the Air* presents 'Journeys in Music Land.'" Then the rich, friendly voice of Professor E. B. Gordon, of the University of Wisconsin, greets them. "Good afternoon, boys and girls. Here we are on a bright and sunny afternoon. Let's start out today by singing 'Music.' Here's the starting tone. Everybody, sit up

straight!" Then, led by a studio group, children throughout the state sing an Irish melody with words especially arranged for them.

Professor Gordon had begun his experimentation in broadcasting music appreciation courses in the winter of 1921-22, over 9XM, the call letters of the University of Wisconsin before standardizing of radio had really begun. In 1931 the *Wisconsin School of the Air* was organized. Only a few hundred listened in that first year, but this radio instruction has grown until now it is estimated that more than 40,000 join in the exercise that is making for the upbuilding of an appreciation for good music—and this is just one of the American commonwealths, although, admittedly, the leader in this type of radio education. The possibilities of this form of radio activity are almost beyond conception, as music is only one of the many fields of learning where radio is helping to bring education of a high calibre to the masses.

Speaking locally of the Nebraska situation, a similar course went on the air over KFAB (Lincoln) beginning March 4, 1931. It continued with marked success until forced off the air by the new owners of that commercial station. To their way of thinking, the music lessons brought in no income and, therefore, was not a worth while project. Hence, children in Nebraska's rural schools many of them had begun to look forward to the "music period" had to return to the use of phonographs with no central inspiring radio leadership. This is but one example of the struggle for a "place in the sun" as waged between many commercial interests and educational stations. This volume, as one of its functions, will record those that occurred within the Mid-West.

In this interesting though tragical battle between business men and educators, the commercial interests have been significantly successful. However, it seems

unthinkable that the great American Government founded to insure life, liberty, and the pursuit of happiness in the rapid development of broadcasting should continue forever to make education so definitely secondary in importance to the profit motive. The current domination in the field by commercial stations has imposed a technique that seriously cramps the educator's use of radio. The conclusion is rapidly gaining ground that nothing but definitely allotted, distinctly separate frequencies reserved for educational interests will serve. For the most part, shelved in its development for the duration of the War, the recent allocation in frequency-modulation bands to educational interests may be the answer. Time alone will tell.

* * *

Mid-Westerners long have proudly claimed that their section of the country is more typically "American" than any other part of the nation. During the rapid expansion period in American history, the great masses of European immigrants stopped in the East with usually only the more hardy among them infiltrating into the bread-basket sections of the country. Likewise, the Orientals were largely halted on the Pacific Coast; and the Negro, for the most part, was centered in the South and made his later migrations to the industrial sections of the Northeast and Great Lakes area.

Of course, all these racial elements make up the United States of today, but the population of the Mid-West has been more homogeneously racial and far more traditional in its typically American love of soil, desire for unlimited freedom of expression, and, perhaps, downright cussedness in maintaining the pioneer traditions handed down from parent to child than any other section, with the possible exception of the Rocky Mountain people. All this unquestion-

ably accounts for the more extensive development of the educational possibilities of radio in the seven Mid-Western agricultural states, relatively speaking, than in the remainder of the nation. In the neighboring Rocky Mountain states technical broadcasting difficulties and scarcity of population retarded the pioneer interest in broadcasting, although the same need and interest were present as in the Mid-West agricultural sections.

Table 1 is taken from the United States Census, and shows a division of the 48 American states and the District of Columbia into nine sections: New England, Middle Atlantic, East North Central, *West North Central*, South Atlantic, East South Central, West South Central, Mountain, and Pacific. It should be noted that the 1940 population of the United States was 131,669,275, and that the seven *West North Central* States (with a total population of 13,516,990) represent 10.3 per cent of Americans, as of 1940. The statistical organization of this book follows the divisions as adopted by the United States Government in its census figures.

TABLE I

UNITED STATES CENSUS (1940) AS DIVIDED INTO
GEOGRAPHICAL SECTIONS OF THE NATION

NEW ENGLAND	8,437,290
Connecticut	1,709,242
Maine	847,226
Massachusetts	4,316,721
New Hampshire	491,524
Rhode Island	713,346
Vermont	359,231
MIDDLE ATLANTIC	27,539,487
New Jersey	4,160,165
New York	13,479,142
Pennsylvania	9,900,180

TABLE I (Continued)

UNITED STATES CENSUS (1940) AS DIVIDED INTO THE
GEOGRAPHICAL SECTIONS OF THE NATION

EAST NORTH CENTRAL	26,626,342
Illinois	7,897,241
Indiana	3,427,796
Michigan	5,256,106
Ohio	6,907,612
Wisconsin	3,137,587
WEST NORTH CENTRAL	13,516,990
Iowa	2,538,268
Kansas	1,801,028
Minnesota	2,792,300
Missouri	3,784,664
Nebraska	1,315,834
North Dakota	641,935
South Dakota	642,961
SOUTH ATLANTIC	17,823,151
Delaware	266,505
District of Columbia	663,091
Florida	1,897,414
Georgia	3,123,723
Maryland	1,821,244
North Carolina	3,571,623
South Carolina	1,899,804
Virginia	2,677,773
West Virginia	1,901,974
EAST SOUTH CENTRAL	10,778,225
Alabama	2,832,961
Kentucky	2,845,627
Mississippi	2,183,796
Tennessee	2,915,841
WEST SOUTH CENTRAL	13,064,525
Arkansas	1,949,387
Louisiana	2,363,880
Oklahoma	2,336,434
Texas	6,414,824
MOUNTAIN	4,150,003

Arizona	499,261
Colorado	1,123,296
Idaho	524,873
Montana	559,456
Nevada	110,247
New Mexico	531,818
Utah	550,310
Wyoming	250,742
PACIFIC	9,733,262
California	6,907,387
Oregon	1,089,684
Washington	1,736,191
UNITED STATES (1940) CENSUS	131,669,275

Table 2 presents "States in Which Standard Broadcast Licenses Have Been Held by Institutions of Higher Education." It shows that of the 123 accredited institutions of higher education holding standard broadcast licenses, 35 of these were located in the seven West North Central States—or 28.5 per cent. Also, of the 29 standard broadcast licenses still in operation in 1943 by these institutions of higher education, 12 are located in these seven Mid-West states—or 41.4 per cent. These are significant statistics when it is remembered that these states represent but 10.3 of the total American population. These figures indicate clearly and decisively . . . that so far as accredited institutions of higher education are concerned . . . the Mid-West has been equaled only by the East North Central States (Illinois, Indiana, Michigan, Ohio, and Wisconsin with 30 licenses issued in five states), and further, that the West North Central States in the matter of stations being operated today by these institutions had led the other sections by many lengths—to borrow a term from the race horse vernacular.

TABLE II

STATES IN WHICH STANDARD BROADCAST LICENSES HAVE BEEN HELD BY INSTITUTIONS OF HIGHER EDUCATION

<i>Geographical Location</i>	<i>Total Institutions Holding Licenses</i>	<i>Total Licenses Active in 1942</i>
	1922-1942	
NEW ENGLAND (6 states)		
Connecticut	1	0
Maine	1	0
Massachusetts	1	0
Rhode Island	0	0
New Hampshire	1	0
Vermont	1	0
Total	5	0
MIDDLE ATLANTIC (3 states)		
New Jersey	0	0
New York	5	2
Pennsylvania	6	1
Total	11	3
EAST NORTH CENTRAL (5 states)		
Illinois	7	1
Indiana	2	1
Michigan	6	1
Ohio	8	1
Wisconsin	7	2
Total	30	6
WEST NORTH CENTRAL (7 states)		
Iowa	8	3
Kansas	2	2
Minnesota	6	2
Missouri	8	1
Nebraska	4	0
North Dakota	3	1
South Dakota	4	3
Total	35	12

**SOUTH ATLANTIC (8 states and
the District of Columbia)**

Delaware	0	0
District of Columbia	1	0
Florida	2	1
Georgia	4	1
Maryland	0	0
North Carolina	1	0
South Carolina	2	0
Virginia	1	0
West Virginia	1	0

Total	12	2
-------------	----	---

EAST SOUTH CENTRAL (4 states)

Alabama	1(*)	0
Kentucky	0	0
Mississippi	1	0
Tennessee	1	0

Total	3	0
-------------	---	---

WEST SOUTH CENTRAL (4 states)

Arkansas	2	1
Louisiana	4	1
Oklahoma	2	1
Texas	3	1

Total	11	4
-------------	----	---

MOUNTAIN (8 states)

Arizona	1	0
Colorado	3	0
Idaho	1	0
Montana	2	0
Nevada	1	0
New Mexico	2	0
Utah	1	0
Wyoming	0	0

Total	11	0
-------------	----	---

(*) This one station originally was licensed to the Alabama Polytechnic Institute with the University of Alabama and Alabama College later acquiring joint ownership with the original lessee.

TABLE II (Continued)

STATES IN WHICH STANDARD BROADCAST LICENSES HAVE BEEN HELD IN INSTITUTIONS OF HIGHER EDUCATION

Geographical Location	Total Institutions Holding Licenses	Total Licenses Active in 1942
	1922-1942	
PACIFIC (3 states)		
California	2	0
Oregon	1	1
Washington	2	1
Total	5	2
GRAND TOTAL	123	29

Table 3, including data for the West North Central States only, lists alphabetically under each state these accredited institutions of higher education that have held standard broadcast licenses for any length of time. It should be noted that only those that are listed in the *United States Office of Education Educational Directory, Part III, Colleges and Universities*, have been included. For example, the New Columbus College (Sioux Falls, South Dakota) has not been included although it held license for nearly six months (December 17, 1923, to June 13, 1924). The latest available report on this institution is that its building is now being used as an orphanage.

TABLE 3

MID-WEST UNIVERSITIES AND COLLEGES THAT HAVE HELD STANDARD BROADCAST LICENSES

OWA (8 institutions—3 operating in 1943)

 Graceland (Junior) College

*Iowa State College of Agriculture and Mechanic Arts

 Iowa State Teachers College

(*) Operating in 1943.

*Luther College
Morningside College
Penn College (*now* William Penn College)
*State University of Iowa
Western Union College

KANSAS (2 institutions—2 operating in 1943)

*Kansas State College of Agriculture and Applied Science
*University of Kansas

MINNESOTA (6 institutions—2 operating in 1943)

Augsburg Seminary (*now* Augsburg College and
Seminary,
Carleton College
Concordia College
St. John's University
*St. Olaf College
*University of Minnesota

MISSOURI (8 institutions—1 operating in 1943)

Central Missouri State Teachers College
Missouri Wesleyan College
Northeast Missouri State Teachers College
*St. Louis University
Southeast Missouri State Teachers College
Southwest Missouri State Teachers College
Stephens (Junior) College
University of Missouri

NEBRASKA (4 institutions—0 operating in 1943)

Midland College
Nebraska Wesleyan University
University of Nebraska
Wayne State Teachers College (*now* Nebraska State
Teachers College, Wayne)

NORTH DAKOTA (3 institutions—1 operating in 1943)

North Dakota Agricultural College
State Teachers College, Mayville
*University of North Dakota

SOUTH DAKOTA (4 institutions—3 operating in 1943)

*South Dakota State College of Agriculture and Mechanic
Arts

TABLE 3 (Continued)

MID-WEST UNIVERSITIES AND COLLEGES THAT HAVE HELD
STANDARD BROADCAST LICENSES

*South Dakota State School of Mines

*University of South Dakota
Yankton College

The same geographical division (as made in the previous three tables) is used to present "Standard Broadcast Licenses Held by Educational and Religious Groups Other Than Accredited Institutions of Higher Education." *Table 4* is not as satisfactory a basis of comparison as are the data in *Table 2*—there is no common denominator by which relative interests and results can be judged. These 60 institutions having held standard broadcast license (with 15 still in active operation during 1943), include a city board of education, a county board of education, 18 high schools, a junior high school, an elementary school, three colleges (one not included in the *Directory* of the Office of Education and the other two are now out of existence), 12 technical schools representing a great variety in type and quality of instruction, three business colleges, a military academy, a state department of agriculture, a municipal government and 17 religious institutions (mostly churches). Many of these are highly reputable organizations; but the "educational significance" of certain others can be seriously questioned.

An interesting example of this unreliability was the case of the "Amorc College of the United States of America" which claimed in its application for a license that it intended to assist the studies of 30,000 or more students and 50,000 or more friends of the branches of the institution.¹ It was proposed to give formal

¹ One of the best sources of information covering licenses to educational institutions is S. E. Frost, Jr., *Education's Own Stations*, as published in 1937 by the University of Chicago Press.

instruction in hygiene, civics, music, and the like. The station (located in Tampa, Florida) got involved in local politics which aroused considerable opposition from well-established local civic organizations. Also, broadcasting of the cruder details of domestic problems brought further objections. Amorc College there-upon made application for authority to transfer its transmitter to San Jose, California, but the Federal Radio Commission ruled that this area was already oversupplied with broadcasting facilities. Therefore, no application for renewal to operate in Tampa was made, and the license expired March 1, 1928.

TABLE 4

STANDARD BROADCAST LICENSES HELD BY EDUCATIONAL AND
RELIGIOUS GROUPS OTHER THAN ACCREDITED
INSTITUTIONS OF HIGHER EDUCATION

NEW ENGLAND (6 states—1 educational radio station—
0 operating in 1943)

Eastern Radio Institute (Boston, Massachusetts)

MIDDLE ATLANTIC (3 states—8 educational radio sta-
tions—3 operating in 1943)

Bancroft School (Haddonfield, New Jersey)

*City of New York (New York, New York)

Federal Institute of Radio Telegraphy (Camden, New
Jersey)

Gardenville High School (Gardenville, New York)

Philadelphia School of Wireless Telegraphy (Philadel-
phia, Pennsylvania)

*Pillar of Fire (Zarephath, New Jersey)

Seneca Vocational High School (Buffalo, New York)

*Watchtower Bible and Tact Society, Inc. (Brooklyn,
New York)

EAST NORTH CENTRAL (5 states—17 educational radio
stations—4 operating in 1943)

Atwood Township High School (Atwood, Illinois)

Brant Radio Power Company (Terre Haute, Indiana)

(*) Standard broadcast license active during 1943.

TABLE 4 (Continued)

STANDARD BROADCAST LICENSES HELD BY EDUCATIONAL AND
RELIGIOUS GROUPS OTHER THAN ACCREDITED
INSTITUTIONS OF HIGHER EDUCATION

Brown's Business College (Peoria, Illinois)
 Coyne Electrical School (Chicago, Illinois)
 Culver Military Academy (Culver, Indiana)
 *Federated Publications, Inc. (Battle Creek, Michigan)
 Flint Central High School (Flint, Michigan)
 Lane Technical High School (Chicago, Illinois)
 *Liberty Street Gospel Church (Lapeer, Michigan)
 Lombard College (Galesburg, Illinois)
 Milwaukee School of Engineering (Milwaukee, Wisconsin)
 *Moody Bible Institute of Chicago (Chicago, Illinois)
 Ohio Mechanics Institute (Cincinnati, Ohio)
 Parker High School (Dayton, Ohio)
 Petroskey High School (Petroskey, Michigan)
 Scott High School (Toledo, Ohio)
 *Wisconsin Department of Agriculture (Stevens Point, Wisconsin)

WEST NORTH CENTRAL (7 states—11 educational
radio stations—1 operating in 1943)

Atlantic Automobile School (Red Oak, Iowa)
 *Boone Biblical College (Boone, Iowa)
 Cleveland High School (St. Louis, Missouri)
 Evangelical Lutheran Synod (St. Louis, Missouri)
 Moberly High School (Moberly, Missouri)
 New Columbus College (Sioux Falls, South Dakota)
 Omaha Central High School (Omaha, Nebraska)
 Omaha Technical High School (Omaha, Nebraska)
 Palmer School of Chiropractic (Davenport, Iowa)
 Sweeney Automobile School (Kansas City, Missouri)
 William Hood Dunwoody Industrial Institute (Minneapolis, Minnesota)

SOUTH ATLANTIC (8 states and the District of
Columbia—8 educational radio stations—1 operating
in 1943)

Amorc College of the United States of America (Tampa, Florida)

Bliss Electrical School (Tacoma Park, Washington, D. C.)

*Grace Covenant Presbyterian Church (Richmond, Virginia)

Ruffner Junior High School (Norfolk, Virginia)

Savannah High School (Savannah, Georgia)

Technological High School (Atlanta, Georgia)

Toccoa Falls Institute (Toccoa Falls, Georgia)

Young Men's Christian Association (Washington, D. C.)

EAST SOUTH CENTRAL (4 states—0 educational radio stations—0 operating in 1943)

WEST SOUTH CENTRAL (4 states—4 educational radio stations—1 operating in 1943)

Fort Bend County School Board (Richmond, Texas)

*Port Arthur College (Port Arthur, Texas)

Tyler Commercial College (Tyler, Texas)

Wallace Radio Institute (Oklahoma City, Oklahoma)

MOUNTAIN (8 states—4 educational radio stations—1 operating in 1943)

Independent School District of Boise City (Boise, Idaho)

*Pillar of Fire (Denver, Colorado)

Trinidad High School (Trinidad, Colorado)

Union High School (Kellogg, Idaho)

PACIFIC (3 states—7 educational radio stations—4 operating in 1943)

*Benson Polytechnic School (Portland, Oregon)

*Echo Park Evangelistic Association (Los Angeles, California)

*First Presbyterian Church (Seattle, Washington)

Glad Tidings Temple and Bible Institute (San Francisco, California)

North Central High School (Spokane, Washington)

Oregon Institute of Technology (Portland, Oregon)

*Pasadena Presbyterian Church (Pasadena, California)

RECAPITULATION (60 educational radio stations—15 operating in 1943)

City Board of Education	1
County Board of Education	1

TABLE 4 (Continued)

STANDARD BROADCAST LICENSES HELD BY EDUCATIONAL AND
RELIGIOUS GROUPS OTHER THAN ACCREDITED
INSTITUTIONS OF HIGHER EDUCATION

High Schools	18
Junior High School	1
Elementary School	1
Colleges	3
Technical Schools	12
Business Colleges	3
Military Academy	1
State Department of Agriculture	1
Municipal Government	1
Religious Organizations	17
* * *	

Organization of this book (in addition to its introduction and conclusion) provides a chapter each for description of the pioneer radio work in these seven West North Central States. These are presented alphabetically: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. By the very nature of the activity, most of this radio education pioneering in the Mid-West was done by universities and colleges, but public school systems and private experimentation also have been included wherever data have been uncovered. These data have been secured, as far as possible, from the radio education pioneers themselves, although, unfortunately, in many cases these pioneers have passed away or have been impossible to locate. In such instances, secondary sources have had to be depended upon.

IOWA

Iowa has been one of the most radio-education-conscious states in the nation. This early pioneer interest

was due partly to the fact that Miss Agnes Samuelson, for many years the State Superintendent of Public Instruction, was one of the early national leaders, and an enthusiastic one, in the movement. Naturally, therefore, the Iowa Department of Public Instruction was unusually aggressive in its encouragement of both experimentation and utilization in radio activities during the earlier days of the movement. Within recent years the Department has not been as active as formerly, but such a change has been quite general throughout the country, as radio has taken such definite form along commercial lines that educators have lost much of their earlier enthusiasm. The Iowa situation can be summarized by stating that the State College and the State University on the one hand and the State Educational Department on the other, all working together, have been responsible for most of this radio-consciousness in the state.

* * *

The Iowa public school systems apparently have left most of the initiative in radio matters in the hands of these state-supported educational institutions and the Department of Public Instruction. Dr. Carroll Atkinson, in his earlier (1939) *Development of Radio Education Policies in American Public School Systems*, failed to include a single Iowa city among his records of 126 American school systems he found doing outstanding radio work on their own initiative. Dr. Atkinson, in his more recent (1942) *Public School Broadcasting to the Classroom*, again did not include a single Iowa public school system as ever having attempted to broadcast programs intended for classroom use. In another of his (1942) volumes, however, he did relate the history of programs built for school use as developed by the State University of Iowa, Iowa State College, and Luther College—three of such services being located in Iowa out of the thirty-

eight he recorded for the entire United States and possessions.²

* * *

Table 4 shows three other institutions as having operated standard broadcast stations—one very temporarily, one that has been transferred to a commercial company, and the other still in active operation today. The *Atlantic Automobile School* was granted a license on December 1, 1923, for a 10-watt station, later increased to 100 watts. It was planned primarily as an educational medium for service to farmers, but was leased, then later sold, to a commercial operating company on September 28, 1927.

The *Boone Biblical College*, receiving its initial license January 26, 1927, was also originally only a 10-watter. Operation today (1943) is on 250-watt power, restricted to daytime broadcasting. Programs are principally religious in nature, and operation is on a non-commercial basis. In the past there has been considerable emphasis upon the Christian training for children in Boone, Iowa, and the surrounding area as reached by KFGQ.

The *Palmer School of Chiropractic*, of Davenport, Iowa, purchased Station WOC from Robert Karlowa, of Rock Island, Illinois, and secured authorization to transfer it to Davenport where transmitter and studio were installed within a single small room. Mr. Karlowa had been one of the earlier pioneers . . . beginning in 1907 with a small experimental wireless transmitter. License was issued to the Palmer School on May 9, 1922. A faculty member, Dr. D. D. Evins, took a receiving set into an apartment house across the street from where he would listen to the broadcast, raise the window to shout instructions to the operators

² Carroll Atkinson, *Broadcasting to the Classroom by Universities and Colleges* (Boston: Meador Publishing Co., 1942) See pp. 19-23, 34-40, 108-9.

across the street, then wait to see if these instructions were carried out. Late in 1929 the Central Broadcasting Company was formed with President B. J. Palmer as Chairman of the Board of Directors. This organization purchased both WOC and also WHO (Des Moines), and has developed these stations along traditional commercial and network lines, with Dr. Palmer, in 1943, still as the head of the organization.

* * *

Among the eight institutions of higher education that have held broadcast licenses there have been three state-supported schools, four liberal arts colleges, and a junior college. Brief histories of these developments are presented alphabetically rather than in the chronological order in which licenses were received.

Graceland (Junior) College, at Lamoni, Iowa, held license to operate a standard broadcast station from March 15, 1923, to November 10, 1925—a period of two years, seven months, and 26 days. A student, Arthur B. Church, who also was a commercial operator, constructed a wireless station on the campus. The young man was quite a promoter raising nearly four hundred dollars by popular subscription and from entertainments by which a 100-foot tower was erected to support the antennæ. Transmitting and receiving apparatuses were installed. The reports of this development would indicate that the main objective of the personnel was to get distant reception—5000 miles being claimed quite frequently. A similar station in Independence, Missouri, furnished the means for intercommunication between that city and Lamoni, Iowa, as a regular service. Likewise, amateurs through the country were contacted. As it was begun, this project continued as a student activity. Members of the Radio Club (organized October 19, 1917) operated the station. Even after the broadcast

license was relinquished, this campus organization continued to function.

Iowa State College of Agriculture and Mechanic Arts operates its own station, WOI (Ames), receiving the initial standard broadcast license April 28, 1922. Professor F. A. Fish, in the Electrical Engineering Department, had experimented with wireless communication as early as 1913 when an amateur station, 9YI, had been operated. The present radio station actually was begun on November 21, 1921, under this 9YI experimental license. The standard broadcast station was constructed under supervision of Harmon B. Deal, assisted by one of the Engineering students, A. G. Woolfries, who today (1943) is the Assistant Director of WOI. Weather forecasts and market reports were an early service which (by July, 1926) developed into a leased wire service from the United States Department of Agriculture.

In 1925 WOI ceased to be an experimental project of the Engineering Department and became officially a part of the College operated by funds supplied by the Agricultural Extension Service. Since then Professor W. I. Griffith has been the Manager primarily responsible for the agricultural programs, music, drama, sports events, talks, and other features. WOI at present is on the air from eight to twelve hours each day except Sundays and holidays—a total of, more than 3000 hours each year. Analysis recently made of its time shows that 35 per cent had been devoted to education, 31 per cent to agriculture, 29 per cent to entertainment, and 5 per cent to religion. The station presents a complete news service by means of United Press. In addition to three daily periods of news summaries (10 or 15 minutes in length), it flashes "news of the hour on the hour" as a special service.

Besides services designed primarily for the rural population, WOI carries a program of music, dra-

matics, talks, athletics originating in the College, and a large number of series presented by other educational institutions and state organizations such as the Congress of Parents and Teachers, Iowa State Teachers Association, State Department of Public Instruction, and others of similar type. Outstanding educational programs, as originated at Iowa State College, have been:

- Book Reading Program
- Grinnell Hour (music)
- Homemakers' Half-Hour
- Library Service
- Market Service
- Masterwork Series (opera)
- Matins Service (religious)
- Music Appreciation
- Old World Music

The Iowa State College Library began helping the educational program schedule of WOI in 1925. The first common project was the broadcasting of reviews of recent books. Three years later (1928) the reading of books over the air was begun. This led to the establishment of the "Radio Book Club" early in 1930, a plan by which books may be borrowed from Iowa State College for a small fee and return postage.

This "Radio Book Club" began its circulation of books on February 12, 1930, with an enrollment of 231 members, who paid a fee of three dollars each for the privilege of borrowing twenty books. Intended primarily as a service for people in rural areas and smaller communities where there were no circulating libraries, it soon was discovered that many of the subscribers lived in cities such as Des Moines, where it was cheaper to buy a membership than to pay carfare to go to the library.

By June 1, 1939, there had been issued 2,372 mem-

berships, many of which have renewed them several times. The total circulation up to this date was 40,761 with 1,384 different titles available, and with only five books lost during the first eight and one-half years of operation of the plan. Analysis has shown that 35 per cent of the "Radio Book Club" members live in cities and towns having library service, 36 per cent in localities without library service, 4 per cent who had R. F. D. in their addresses (although this figure probably is low because many individuals are so well-known in their communities that it is not necessary to add the R. F. D. to their addresses), and 25 per cent that live outside of Iowa.

Iowa State College has not done much in the field of classroom broadcasting in comparison with its other radio activities. In 1934-35 a series of programs for high school students was broadcast. Subjects in which the faculty presented lessons over the air were: English, history, civics, economics, drama and debate, and general science. In the previous three years, lessons in agriculture had been broadcast that followed the state high school courses of study. This new program of broadcasting high school subjects was intended eventually to do what the course in agriculture had been doing so successfully.

These new courses were not continued into the next year, however. There are perhaps two significant reasons for this lack of success of Iowa State College in classroom broadcasting: (1) Its faculty members are employed to give instruction in technical fields connected with agriculture, mechanical arts, home economics, industrial science, and veterinary medicine, hence they are not familiar with the problems of the public schools. (2) Iowa State College has had no funds with which to employ school specialists capable of adapting programs over the air directly for classroom use.

There has been one outstanding exception, however, in the very successful broadcasting of a series of lectures on the subject of vocational education in which interviews have been used to bring out the dominant facts with reference to each vocation. These occupational guidance series, beginning with the second semester of the 1936-37 year, have been presented in cooperation with the State Department of Public Instruction and the Iowa State Teachers Association.

This work has been the outgrowth of indorsements and suggestions received from several hundred Iowa school superintendents who had signified that they would be interested in having their high school students listen to this type of program. The series, as developed, have been designed especially to supplement the guidance program of the smaller communities. A *Listener's Manual*, intended as an aid to the student in getting the maximum of value from the broadcasts, is sold by the College for ten cents a copy in order to defray the expense of printing.

One of the earliest programs over WOI, that began in 1925 and has continued until the present time, has been the "Music Shop" in which the better types of selections are broadcast by means of transcriptions. It began when a laboratory model of the first electrical pick-up was secured from the General Electric Company. At first the program consisted of a haphazard selection of records played without rhyme or reason. A few letters were received, among them one requesting a tune for a child's birthday party. The selection was played.

The next day there were a dozen miscellaneous requests. After these were played, many other requests resulted until the program developed into a conglomeration of mixed music. WOI then changed its policy, building the program into the better type of music. In so doing, several devices have been used to drama-

itize the presentation. The result has been that the program to date has enjoyed a fifteen-year record of continuous broadcasting.

In 1932 Iowa State College wrote a general letter to the presidents of nineteen Iowa educational institutions, offering each the facilities of WOI for broadcasting. Out of that invitation have grown a number of program series each year. Musical numbers by the glee club or similar organizations with a talk by the president or dean, privileged to say anything he wishes, has been the general pattern of these broadcasts.

WOI since April 25, 1938, has broadcast the NBC "National Farm and Home Hour." Also since April, 1938, several times each week, there have been put upon the air by transcription educational programs from the Columbia Broadcasting System through the cooperation of KRNT (Des Moines).

Iowa State Teachers College operated its own standard broadcast station from September 13, 1923, to December 16, 1925—a period of two years, three months, and three days. Inspired by the early successes of both the State University of Iowa and Iowa State College in their operation of educational radio stations, certain of the faculty members became enthusiastic over possibilities of building a similar service, even though more modest in scale, on the Cedar Falls campus. It was suggested that the departments of English, music, social sciences, and art could present programs that would interest the listeners within the area from which the College drew its students. The argument was also set forth that a transmitter located on the campus would be a valuable instructional tool.

Dr. Homer H. Seerley, then President of the College, reacted unfavorably to the project because of the expense involved. However, when it was found that a

50-watt station could be secured and put into operation for only about \$600, he decided to ask the approval of the State Board of Education for establishment of the station. This approval was obtained and funds secured, but the station throughout its existence was operated on a financial shoestring. It was constructed by A. K. Anderson, then a full-time assistant in the physics department. He later became the first announcer. A great deal of difficulty was met in getting programs upon the air with any degree of regularity—therefore, its deletion because of financial and production difficulties. The apparatus, however, has proved quite valuable for instructional purposes.

Luther College operates its own station KWLC (Decorah), receiving the initial license December 18, 1926. Original call letters were KGDZ—the change to the present KWLC being made January 2, 1927. Due to the financial depression, *Luther College* on December 2, 1932, sought to transfer its license to the *Dubuque Telegraph-Herald*, but the Federal Radio Commission denied the application, so that station operation was continued and, within recent years, has been expanded. Seventy-odd programs are broadcast during a typical week, beginning each morning except Sunday at 7:30 a. m., and signing off each day at 3:30 p. m. In other words, subject to change of hours, the station occupies its channel only part time.

Religious programs include the daily chapel services, divine services in both Norwegian and German, the "Matins" given by the Mission Society, series by the Lutheran Students' Union, religious items in the news regularly throughout the week, church music, and series under title, "Hymns We Love," in which requests from listeners are honored. Organ melodies and musicales, special sport features, programs originated as a service for farmers, and several news series are presented on regular schedule. English, speech,

and library departments also have offered series representing the work of their departments. An unusual series has been the reading of "Freshman Themes." Depending upon the student's choice and his ability to read, these first-year English compositions are presented by him personally or by the instructor as a means of motivating superior work in the classroom.

For a two-year period (1938-40) music appreciation lessons were offered as a service to the classrooms of near-by schools. These consisted of lectures, illustrated by piano music and phonograph records. The Science Department, from time to time, has offered series such as "Adventures in Physics" and "Science News Letter" that have been used as part of classroom exercises in the classroom.

Morningside College held license twice to operate its own station for a period of four years, seven months, and five days.⁸ Walter Ducommun, a student, assembled the equipment and was the first operator. Daily broadcasting included chapel exercises, athletic contests, and musical and educational features. Growing competition of commercial programs and increasing costs for improved equipment brought about the decision to abandon station operation and to spend this money and energy in presenting programs over the facilities of commercial stations.

Beginning in 1930, arrangements were made with KSCJ (Sioux City) for regular weekly broadcasts. Three fifteen-minute periods each week have been used. These have included an early Sunday morning devotional program sponsored by the campus Christian associations, Sunday afternoon musical offerings, while the third period has been varied, providing an opportunity for various members of the faculty

⁸ Licensed December 13, 1923; deleted May 12, 1924; relicensed May 27, 1924; deleted August 1, 1928.

to speak on subjects of general educational and community interest. These programs, since their origin, have been conducted regularly on Sundays with sporadic attempts being made to broadcast at other times during the week.

During the 1938-39 academic year this broadcasting work was conducted more strenuously than in previous years. The devotional broadcast was transferred to KYRJ (Sioux City), which had just been established in the city and afforded a more convenient hour for the group. The Sunday afternoon musicals were presented by the staff of the Conservatory of Music, and by students appearing as soloists and in ensemble work. The Department of Speech undertook the dramatization of a weekly series, sponsored by the United States Postal Service, under title of "Postal Oddities." This was carried throughout the year. Another mid-week feature was the "Morningside College Forum," with talks on various subjects by faculty and staff members.

Ira J. Gwinn, Administrative Secretary, makes the following statement relative to Morningside College broadcasting policies:

In line with the present trend in forum discussions, we have had several groups scheduled on the "Forum Hour." In some instances the program was operated similarly to the University Broadcasting Council's "Bull Session," and the individuals were not informed as to the time they went on the air. In other instances, the group leader was informed of the time although the students participating were not, and in one case the entire group was informed. It seems to be the opinion of those participating as well as that of the station management that the most satisfactory procedure is for the group leader to be informed as to the time, as he then can more effectively direct the conversation from one individual to another.

In addition to these programs, KTRI through a commercial sponsor broadcasts all of our football and basketball games. This was a result of a combined policy of the local colleges and high schools regarding radio publicity. Some requests had previously been voiced, but because of lack of co-ordinated duties, we had not previously lined up for such a procedure. It should be noted that there has been unusually good cooperation among the coaches of the colleges and high schools of Sioux City. The program of play-by-play broadcasts direct from the field or floor was approved by the Council of Coaches and Game Officials. This program was placed on an experimental basis for the year only, but the success of the broadcasts (as well as increased gate receipts) would indicate a permanent policy. The commercial sponsor was one of the local clothing stores for men, whose manager is a trustee of the college and is very keenly interested in athletics.

Beginning March 6, 1939, we tried an additional experiment with KTRI of broadcasting direct the various lectures appearing on the "College Lecture Course" as they are presented before the student assembly; also the devotional chapels which were conducted for students and faculty in the local church. A rather unusual feature was that our entire Commencement program was broadcast. It is the opinion of the College and the local radio station, KTRI, that such broadcasts have been very effective and are good program material. These programs over KTRI have been carried on a telephone loop. The College stands the rental cost of the line.

State University of Iowa operates its own station, WSUI (Iowa City), receiving the initial license June 26, 1922. The original call letters were WHAA, which were changed to WSUI on January 29, 1925. Radio activities had begun in 1911 before broadcasting stations were licensed as such. Numerous experiments were carried on, including broadcasting over an experimental station under the call letters, 9YA.

In 1921 Carl Menzer, owner of a small private radio station and an alumnus of the University, was put in charge of broadcasting. He had full responsibility for all operations during the early years of the station's development. As the activities of the station expanded, its control was placed in the University Extension Division. Later a University Radio Board, consisting of nine faculty members plus the director of the Extension Division and the director-announcer, was appointed. With the Director of Extension as chairman, this Radio Board today determines the policies of the station.

As early as 1924 the State University of Iowa had begun to broadcast University courses for credit over WSUI.* A selected group from the faculty broadcast from the studios during the evening hours. These courses were set up on the same basis as correspondence-study courses, and the rate of tuition was the same, namely, four dollars a credit hour with a two-dollar enrollment fee.

One student was granted a degree by radio. He had completed about three and one-half years of his University work when he was disabled in service during the World War. This young man was able to take enough work by radio to complete the requirements for the B.A. degree, which was granted him via radio at the commencement exercises in June, 1925. It would have been impossible, however, for any student to have completed all the work for the B.A. degree by radio at the State University of Iowa. There never were enough courses broadcast, and the rules of the institution would have prevented it. These radio courses were rather popular at first with an enrollment in each ranging from twenty to fifty students.

* See Carroll Atkinson, *Radio Extension Courses Broadcast for Credit* (Boston: Meador Publishing Co, 1941), pp. 59-67.

The plan continued through 1927. As the novelty wore off, fewer enrollments led the University Extension Division to abandon this type of program and, instead, to broadcast selected courses from the classroom.

This classroom broadcasting was begun in 1928 as another of the experiments of the station. Two courses at first were offered, one in astronomy and one in English novel. These one-hour broadcasts consisted of the professor's lecture and both questions and comments of the students. Students off the campus were permitted to enroll in some of these courses for credit; others were put on the air as a series of lectures of general interest to the public. From listeners' comments it was judged that a fairly large group was enjoying the courses. Records show, however, that relatively few ever enrolled for University credit.

Professor H. Clay Harshbarger of the Speech Department inaugurated a course for the training of radio announcers in 1930. This has included not only instruction in proper radio speech but also training in program arrangement, continuity writing, and technical problems of production. Programs have been arranged and presented over WSUI by students taking this course. Under the direction of Professor E. B. Kurtz, head of the Department of Electrical Engineering, a television station, W9XX, was licensed on May 27, 1932, to explore the educational possibilities of this type of broadcasting.

Experiments with the recording of programs were begun by WSUI as early as 1929. On October 14, 1932, the University began a series of twenty-five talks in psychology given by members of the faculty. This series was presented as an experiment for the purpose of determining the appropriate level and style of radio address in an academic subject, the means of recording the address for reproduction by other radio sta-

tions and by phonograph, and the ways of utilizing the printed address in the follow-up for extension of this service.

The State University of Iowa began on October 15, 1934, a series of programs for high school students. Contents of the broadcasts and the class work demonstrations were selected so they could be considered an integral part of the regular high school course. High school principals and teachers were provided in advance with assignment lists and informative material. These initial broadcasts (given on Mondays and Tuesdays at 11:45 a. m. until noon, and on Wednesdays and Thursdays from 11:30 a. m. until noon) closed on February 1, 1935, because they had been planned primarily as an experimental series.

This broadcasting to high schools in its second year (1935-36) included a panel discussion on the events of the week each Monday at 1:00 p. m., with three University high school teachers participating under the leadership of a University professor. The purpose of this particular program was to evaluate for high school students the latest developments in social, economic, and political problems and to correlate history with current events. This service to the classroom has grown into program series for high school, elementary school, and even Saturday school activity programs. It is one of the major projects of WSUI.

It has been estimated that there are at least 72,000 speech defectives of school age in Iowa—more than the seriously crippled, the blind, and the deaf combined. The "Speech Clinic of the Air" was established on February 6, 1935, to alleviate this condition. Series of programs varying from fifteen to seventeen weeks in duration have been given by the University Psychology and Speech Clinic. Programs have been presented in the afternoon after school has been dismissed so that teachers may listen to them. Typical of the sub-

jects presented have been: "Place of the Home in a Speech Correction Program," "Speech Correction in the Elementary School," "What the Speech Correction Teacher Should Know about Dentistry," and "How to Examine a Stutterer." These programs have been intended, not for the speech defective, but for the person who hopes to help him.

In 1934 the University Extension Division began to broadcast language courses — French, Spanish, and German — from the studio in the later afternoon. Students have been permitted to enroll for these courses in connection with similar ones in the correspondence study list.

WSUI has an extensive news broadcasting service that includes Associated Press dispatches and news of the University. These are presented three times daily by selected students from the *Daily Iowan* staff and from the class in radio news. Recently Merle Miller, one of the student news commentators, received a scholarship grant from the *Chicago Tribune* to cover his expenses for a four-month study period in London.

The State University of Iowa Extension Division regularly publishes three pamphlets for the promotion of WSUI work. For each of the twelve months of the year a *Program Schedule* is printed. Schedules of the air college, speech clinic, and state group programs are included within one bulletin. The *University of Iowa Extension Bulletin* is issued to cover the work of each half of the school year in the WSUI radio activities.

WOI at Iowa State College and WSUI at the State University of Iowa have developed, among other things, two outstanding examples of station cooperation: (1) broadcasting in the field of parent education, and (2) beginnings of an educational network.

As a result of an experiment which began in 1928, there was formed in 1930 a "Radio Child Study Club"

as a unique program offering. This was developed to the point that identical programs were given weekly in the afternoon over WOI (licensed to operate in the daytime only) and on the same evening over WSUI so that groups might choose at their convenience a day or night hour. These programs later were broadcast and rebroadcast at the same time over both stations. They are intended to supply parents with up-to-date material on child rearing direct from child-development centers. The Iowa Child Welfare Research Station and the allied departments of Iowa State College, State University of Iowa, and the Iowa State Teachers College cooperate in presenting this series.

Four courses have been included in a two-year cycle with twelve meetings in each annual series of each course. The four courses center around: (1) the family, (2) the pre-school child, (3) school-age children, and (4) adolescents. Each course has consisted of a short talk one week and a roundtable discussion on the next, broadcast alternately each two weeks. Two study plans have been offered — one for groups and one for individuals.

Ten or more persons may organize a study group and enroll without charge by reporting the names to either station. One person, chosen as leader, is then supplied in advance with a copy of the talk and a list of reading references. The group is given the opportunity to work out a suggested solution to the problem to be discussed, and a report form is provided for this. Individuals who find it difficult to organize a group may become members and receive printed matter by paying a nominal fee. Questions sent in by individuals are discussed over the air at the succeeding broadcast. Parent-Teacher Association groups, by forming as listening groups, receive credit toward filling the goals for units.

In 1936 a plan for the exchange of programs between WSUI and WOI, both state-owned and non-commercial, was put into operation. After some experimenting, it was worked out that each station should take approximately eighteen hours of rebroadcasts from the other station each month. Thus the entire state has been covered by programs of the Iowa Federation of Women's Clubs, Daughters of the American Revolution, Iowa League of Women Voters, Radio Child Study Club, Iowa Congress of Parents and Teachers, American Legion Auxiliary, Iowa State Medical Society, and Junior Academy of Science. Programs originating in the classroom in Iowa City have been rebroadcast by WOI. In return Iowa State College originates series such as "Daily Service Reports," "Organ Recitals," "Book Chat," "Magazine Rack," and "Far Lands" which have been rebroadcast by WSUI.

This cooperative plan was presented before the 1937 annual convention of the National Association of Educational Broadcasters by Director Menzer of WSUI. A new plan was proposed at that time to join a group of educational stations into a network which might cover a considerable portion of the Midwest. Engineers have been testing the feasibility of such a network in view of problems such as interference from other stations and insufficient power—both of which form serious limitations to successful rebroadcasting of programs. So far, there has been no further extension of this network plan.

Western Union College held license three times to operate its own station for a total period of four years, nine months, and twenty-five days.⁵ During much of

⁵ Licensed February 6, 1923; deleted July 13, 1924; relicensed October 17, 1924; deleted January 22, 1926; relicensed August 19, 1926; transferred to Sioux Falls Broadcast Association September 1, 1928.

the time that the station covered by these licenses was being operated, programs of an educational nature were broadcast on an average of two and one-half hours a day. Difficulties were encountered in securing funds to employ sufficient personnel and talent. The Federal Radio Commission, as was its policy at the time, demanded that time on the air be increased by the College in order that holding of the broadcast channel might be justified. Commercial interests were seeking the Western Union College wave-length, as was the common predicament of most educational stations at the time. When the Federal Radio Commission issued an order for Western Union College to appear and show cause why its frequency should be retained, the transmitter was sold and license transferred to the Sioux Falls Broadcast Association, Inc., which then established a commercial station in Sioux Falls, South Dakota.

Since 1928, the Western Union College radio activities of necessity have been limited. It has been possible, however, to offer an occasional program over the Sioux City, Iowa, commercial stations and also over WOI (Ames), owned and operated by Iowa State College. The high cost of line charges for remote control programs from the campus has been an important factor in preventing the development of a broadcasting policy on definite schedule.

William Penn College (then known as *Penn College*) held license twice to operate its own station for a total period of four years and twenty days.⁶ This radio work was initiated by individual members of the faculty and student body who were interested in broadcasting as a hobby. Earl Paulsen, a commercial chemist, served as operator of the station during its

⁶ Licensed May 7, 1923; deleted September 4, 1923; relicensed November 3, 1924; deleted July 5, 1928.

existence. After Mr. Paulsen left Oskaloosa for another position and certain key students had graduated, interest in experimental broadcasting over a 10-watt transmitter began to lag. Financial difficulties also arose at this time so that it was decided not to appear at a hearing before the Federal Radio Commission to show that operation of the station was in "public interest, convenience, or necessity." Station operation, therefore, was abandoned and license was deleted.

Since 1928 occasional broadcasts have been given over the facilities of the state-owned stations, WOI (Ames) and WSUI (Iowa City), as well as over those of commercial stations in the area. No definite broadcasting policies, however, have been established because of the absence of commercial stations in Oskaloosa.

* * *

A most worthy experiment in educational broadcasting by Station KMA (Shenandoah, Iowa) deserves a place in the story of the attempts to reach the public, especially farm folk. Earl E. May, University of Nebraska, 1915, and his wife, Gertrude F. Welch May, ex-1917, were the personalities behind this experiment. Mr. May was born in western Nebraska, and therefore knew from experience the problems of the solitude in frontier life. After he had built KMA and saw the definite influence it was exerting among rural people, he wanted to try an experiment in broadcasting . . . to popularize education . . . even to make it a part of the people's entertainment. He asked his Alma Mater to join in the effort.

Since the University of Nebraska had no station of its own at that time, Mr. May felt he might widen its sphere of influence among the general public. It seemed best to him to secure from the Extension Division of the University of Nebraska certain educational materials which could be made available to inter-

ested people at cost. That there might be no misunderstandings or conflicts in authority, he purchased from the University at regular rates the courses that served his purposes. He appointed the Anderson Co-ordinated Selling Bureau (Norman E. Anderson, Manager, Lincoln, Nebraska) as agent to receive all inquiries and to answer the same, to mail out all courses ordered, and to handle all financial matters.

Seventeen of the so-called "Life Enrichment Courses" were selected. They carried no University credits, but were intended to appeal to a great many adults. They are described in mimeographed literature as follows:

An approved manner for such self-improvement at home, prepared especially for: (1) those unfortunates who never had an opportunity for a general education, including cripples, new citizens, and those foreigners who cannot read English; (2) those who wish to better themselves or who did not master these important subjects when they attended school; (3) those many ambitious people of all ages who desire to acquire "America's Finest Life Enrichment" at home, or those who wish to gain quicker success in any field of employment. Fascinating self-check Quiz Games make it fun for everyone to remember the right answers as furnished. No long reading assignments, no grades to strive for, no time schedule to follow, and nothing extra to buy. When directions are followed in lesson order, completion of any one or more of these Quick Home Reading Digests provides a fascinating way for self-improvement. Each lesson is only ten cents.

Series of Digests:

- No. 1 Body and Mental Health Control—27 lessons
- No. 2A American Better Language Usage—10 lessons
- No. 2B Better Language Usage . . . Grammar—
12 lessons
- No. 3C Common Commercial Bookkeeping Skill—
18 lessons
- No. 4 Modern Letter Writing Principles—10 lessons

- No. 5 Popular Social Science Surroundings—19 lessons
- No. 6 Approved Library Training Methods—
20 lessons
- No. 7A Simple Figuring and Arithmetic Review—
10 lessons
- No. 8 Easy Photograph Skill and Technique—
19 lessons
- No. 9A Home Spending Judgment Skill—21 lessons
- No. 9B Protection and True Ways to Save—15 lessons

Special Help for Foreign Language Readers to help learn English:

- No. 10A For German Readers—6 lessons
- No. 10B For Spanish Readers—6 lessons
- No. 10C For Italian Readers—6 lessons
- No. 10D For French Readers—6 lessons
- No. 10E For Swedish Readers—6 lessons

On April 14, 1939, Mr. May began broadcasting information about this new educational service from scripts prepared by his Lincoln agent. Inquiries began coming in the next day principally from Iowa and Nebraska with a few from Kansas and Missouri. One was received from Evanston, Illinois, and one each from Chester and Fulda, Minnesota. These continued a few each day until September 1 when the last inquiry was received from Casey, Iowa.

The rapidly developing War situation by the middle of April, 1940, should be recalled. The President was calling upon the Western Hemisphere to stand together; Hitler was sweeping through the Lowlands. Congress was setting up an appropriations program in preparation for a War that seemed inevitable. Under these circumstances the listeners that ordinarily responded to KMA service features seemed to want nothing but War news. The broadcasting of the educational program soon showed that it could not compete with the intense interest being shown in world-

wide affairs, so it was taken off the air. As a radio-education experiment of a commercial station in one state combining with the State University in another, it was unique in the history of broadcasting.

KANSAS

Kansas, although probably not as radio-conscious as neighboring Iowa, has had two state-owned radio stations that are still in operation during 1943. It should be noted that only 29 of the 123 American universities and colleges having held standard broadcast license since January 13, 1922, are still in operation during January, 1943 — 21 years later. Considering this high death rate among such stations 76.4 per cent of the institutions having owned stations no longer holding standard broadcast licenses Kansas is unique as a state in that its only two educational stations are in operation today. There has been no other educational standard broadcast station operated by a church or similar organization in Kansas to date.

* * *

Dr. Atkinson, in his 1939 study of 126 American public school systems, reported the radio activities of three Kansas cities: Kansas City, Lawrence, and Topeka. His *Kansas City* report centered around the Wyandotte High School where, in 1937, broadcasting was definitely organized under a trained director. He stated:

Different departments have given sketches of what they are doing in their classes in order primarily to acquaint parents with the activities of the high school. When the morning programs were initiated, they were definitely educational so that the evening programs became more enter-

taining in type, presenting adaptations and dramatizations of literary works. The success of these called forth the request for the dramatization of the history of Wyandotte County. In order to secure the material, twelve students spent their Christmas holidays interviewing early settlers of the county. These students then cast the material into play form for radio presentation. For their study these boys and girls received credit in the English and history classes.⁷

The *Lawrence* activity, as reported, had been largely dependent upon the operation of the University of Kansas radio station. It was stated that even the tiny tots in the primary rooms had become radio-conscious and enjoyed using toy "mikes" to "broadcast" for the entertainment of their groups. A noteworthy practice was reported in the secondary schools. In preparing programs, students of English classes frequently originated their own script, counted the words, gauged the length of time required, and in many other practical studio-like ways found profit by such exercises. It was claimed that good speech, clear enunciation, and correct pronunciation have been motivated in quite dynamic ways by means of broadcasting techniques in these English class exercises.

Topeka, at various times, has had remote control arrangements with the local station that has permitted broadcasting from the high school. Upon occasion school groups have gone to Kansas City to put on programs over larger stations. When the Topeka Public Schools had a bond issue before the people, there was some broadcasting by Board of Education members regarding the matter. When the National Debate Tournament was held in Topeka in May, 1934, there were radio debates during all that

⁷ Atkinson, *Development of Radio Education Policies in American Public School Systems* (Edinboro, Pa.: Edinboro Educational Press, 1939), p. 154. See also pp. 153-4, 172-3, 249-51.

period. During 1938-39 at an invitation tournament, there was a radio debate with judges chosen from various places over the state.

* * *

Kansas State College of Agriculture and Applied Science held license to operate its own station for a period of three years, eight months, and 13 days.⁸ The original call letters were WTG. Kansas State College today operates its own station, KSAC (Manhattan), being granted this license to broadcast on January 27, 1925. There had been some experimental work in broadcasting of weather reports as early as 1912 over a station known as 9YV. This was temporarily discontinued during the World War but was resumed in 1919. Professor E. R. Lyon of the Physics Department took over the radio equipment in 1921. Soon thereafter the wireless 9YV was converted into WTG, a 100-watt radio telephone station over which the spoken word and music were first sent out in 1921. Interest in the possibilities of broadcasting grew in the next two years, but the equipment needed was so expensive that College officials despaired of getting the necessary appropriations.

At this time KFKB began operating at Milford with sufficient power to cover the entire state of Kansas quite effectively. Consequently, Professor Lyon, Sam Pickard, and L. C. Williams chipped in fifty dollars each to guarantee the first tolls, rented a long-distance telephone line to the Milford station over which Kansas State College went on the air February 11, 1924. J. P. Chapman, of the Division of Extension publicity staff, recently prepared a history of the station as a portion of the "Extension Service 25th Anniversary Observation" (released as part of the twenty-fifth an-

⁸ Licensed April 6, 1922; deleted December 19, 1923; relicensed January 27, 1925.

niversary of the Smith-Lever Act) under title of *KSAC—Its Story*.

Mr. Chapman states in part as follows:

The results of this early experiment in radio-casting from Kansas State College were so gratifying, the people were so loud in their acclaim, that the state legislature and officers of the College became attentive. A new 500-watt standard Western Electric equipped station was financed at a cost of \$29,000 from a reserve fund which has been accumulated in funds appropriated for Extension work. By special permission of the Acting Secretary of Commerce, this station began operation on December 1, 1924, when it was dedicated with a 5-hour nation-wide Kansas Aggie program. Thus was KSAC born.

During the period of remote control broadcasting over KFKB in 1924, the College and Extension specialists presented a series of lecture courses with listeners being regularly enrolled for a ten week period of twenty-five minute lectures on crops, livestock, dairying, poultry, agricultural economics, foods, clothing, interior decorations, radio, rural architecture, farm mechanics, and general subjects. The first broadcast schedule ran five nights a week from 7:00 to 8:00 p. m., Monday through Friday.

Success of these programs resulted in an extension of a thirty-two week period of an enlarged "curriculum" of twenty-seven courses—five in agriculture, six in engineering, four in home economics, and twelve in general science. This "College of the Air" series, which was the first all-college radio program from Kansas State College, remained one of the main features of the institution's broadcasting when KSAC was obtained on December 1, 1924.

According to the March 14, 1925, issue of *Literary Digest*, KSAC was the pioneer station to broadcast college courses over the air. This account stated that

forty radio courses embodying the essentials of that number of college subjects were being broadcast, and that application for enrollment had come from practically all the American states.

The "College of the Air," since its beginning, has developed and grown each succeeding year. Agriculture and home economics courses, originally offered on this program, have been transferred to series devoted specifically to these fields of interest. Replacing these subjects, courses embracing every other department in the College have been added to the "College of the Air" schedule which now includes veterinary medicine, all branches of engineering except agricultural engineering, all the College branches of general science, and graduate study. The "College of the Air" now is presented Monday through Friday. Program series have included: music appreciation, literature, history, government, economics, sociology, health, philosophy, hobbies, vocational guidance, psychology, public speaking and dramatics, various phases of engineering activities, and veterinary medicine.

Ben Darrow credits KSAC as being the second station in the United States to experiment with classroom broadcasting.⁹ His account tells how Sam Pickard in 1925 conceived the idea of broadcasting instructional material upon a state-wide basis, using KSAC. These broadcasts were intended for country schools. They included: music, discussions of educational subjects, short lessons in medicine, and short periods in calisthenics. This "Rural School Program," which was aired on February 2, 1925, was offered five days a week from 9:00 to 9:25 a. m., Monday through Friday. It opened with a short march selection, followed by a five-minute music lesson, and eight minutes of

⁹ Ben Darrow, *Radio the Assistant Teacher* (Columbus: R. G. Adams & Co., 1932), p. 21.

music for singing exercises. Then came an inspirational talk for the rural school children. The period ended with five minutes of calisthenics. Because radio equipment at that time had just begun its early rapid development, boys and girls were given assistance in building sets. Some fifty schools were equipped and listened for awhile. The effort was discontinued, according to the organizer, because the size of the audience was limited not by lack of interest so much as by lack of radio sets with which the students might listen.

The "Noon Farm Program" at 12:30 p. m. began with the opening broadcast of KSAC on December 1, 1924, and still is being broadcast today. In the beginning it consisted of a musical introduction, two seven-minute timely talks, and a question box. As many as twenty-five to fifty concise answers to seasonable questions were given within one program. Subjects such as the following were included: spray dates, insect outbreaks and control, warning of livestock diseases, and announcements of interest to farmers.

Specialists of the Division of Extension, aided by professors of Agricultural Engineering, were added to the farm hour schedule on September 1, 1933, broadcasting a forty-minute program on the first Thursday of each month. Then, on February 2, 1935, the "Housewives' Half-Hour" was begun. Records in annual reports and other materials disagree on the exact original length of this program. While it is called "Half-Hour," yet in several places it is referred to as running from 9:55 to 10:55 a. m., and in another place the schedule shows it running from 9:55 to 10:25 a. m.

The "Boys and Girls 4-H Club Program" was begun in October, 1926, and has been a regular KSAC feature to the present day. Inspirational and practical talks by both faculty and club members, music, reports,

announcements, travel talks, and discussions of outstanding features in the 4-H program have been included in this series.

"Housewives' Musical Program" began September 26, 1927, and continued until September 1, 1937. Its purpose was to acquaint listeners with a superior quality of music by means of orthophonic recordings. Instead of a special program series of this nature, brief musical interludes now are incorporated into the "Homemakers' Hour" between other features.

Music appreciation programs for use in the classroom were offered first in the 1927-28 school year. A health period for children and adults was begun in September, 1928. Physical Education Department faculty members have directed listeners during this period, with calisthenic charts being furnished upon request so that organized exercises could be taken more effectively via the radio.

Market reports first were offered as a service in 1928, and have been continued to the present day with KSAC enlarging this service by cooperation with the United States Department of Agriculture. In this national service, educational seven-minute talks on agriculture and home economics are routed through the Kansas State College Extension Division, and from there to commercial stations in Kansas and neighboring states. Specialists review this material for its timeliness and practical value as applied to the Kansas situation. Whatever material is judged to be of value in Kansas is supplemented by other material, and then routed to the cooperating commercial stations as well as being used over KSAC.

During the spring months of 1938, KSAC broadcast for a trial period three news and four market programs each day from the leased wire service of the Associated Press through the local newspaper that has the Associated Press franchise for Manhattan.

Through the cooperation of the newspaper, this service has been continued until the present time.

KSAC is strictly an educational station, carrying no commercial programs. There are no courses broadcast through which listeners may earn College credits; nor are the "College of the Air" or other series presented especially for classroom listening. All programs, with the exception of the 4-H Club series, are aimed at adult education. Scheduled talks are prepared and presented by members of the Kansas State College faculty who do this work on a purely voluntary basis, receiving no additional compensation for time spent in preparing program materials.

Improvements of broadcasts from KSAC have been attempted, based on recommendations of listening audience surveys that were conducted in 1935 and 1936. Improvements made without additional financial aids have included: (1) increased use of drama, interviews, and dialogues, (2) instructions to broadcasters for improved presentations, (3) more effective publicizing of radio programs by issuing of weekly radio bulletins, news stories of program highlights and, (4) special releases on series of broadcasts dealing with specific topics.

Special mailing lists of listeners logically interested in the subjects to be broadcast now are used for the sending of advance program notices. It was felt that the printing of program bulletins several months in advance made it impossible to disseminate up-to-date information about scheduled broadcasts so the change was made from the issuance of monthly to weekly bulletins, which are published for a week at a time and go to press only ten days before they are placed in the mails. Last-minute changes in program schedule thus may be publicized as a result of this new policy. H. Umberger has been director of the Kansas State Col-

lege Extension Service and of KSAC since the origin of the station.

University of Kansas operates its own station, KFKU (Lawrence), receiving the initial license on December 18, 1924. This was a development within the Department of Electrical Engineering, in fact it was the Department and not the University that received the first license. The dedicatory program of KFKU went on the air December 15, 1924 — three days before the federal authorization to broadcast was officially received. Regular program schedule began January 5, 1925, and included twelve series of lectures. Two of these were used to supplement courses by correspondence leading to University credit.¹⁰ Reception at that time was not dependable enough to warrant further continuance of credit courses after the first half-year, but informative and instructional talks have been featured consistently by the station to the present time.

On May 20, 1926, Professor H. P. Cady brought nation-wide attention to the University of Kansas by broadcasting the sound of an atom. The apparatus consisted of a leyden jar and a piece of radio-active substance.

In 1931 difficulties in official frequency assignments and conflicts of interest between KFKU and commercial broadcasting interests resulted in the adoption of a definite daily schedule of hours. At first, additional time was provided for the broadcasting of football and basketball games; but these exceptions became less frequent as the broadcasting industry developed. Today KFKU is on the air approximately one hour each day, averaging eighteen programs a week.

Among the program series developed have been:

¹⁰ See Atkinson, *Radio Extension Courses Broadcast for Credit*, pp. 68-70.

"Problems of the Growing Child," "Educating Yourself and Your Child," "Health Through the Ages," "Study of Shakespeare," "News Flashes," "Kansas Then and Now," "Music Appreciation," and Spanish, French, and German languages. Faculty members and students both have participated in the building of this program schedule.

During the 1936-37 academic year two new features were developed as part of the regular KFKU program of broadcasts. A series of short plays dramatizing thirty historical events, which have moulded and established the Kansas of today, was presented over the air by the Kansas Players under supervision of the Speech and Dramatic Art Department. Each episode has been developed with careful attention to historical accuracy. The moods of these plays have ranged from farce through comedy, and romance to tragedy. Classes in history and social science from the fourth grade through the high school have been reported as following these dramatizations, discussing them during the class periods on the day following each broadcast.

The other new feature was the establishment of a "School of the Air," directed primarily to students in secondary schools.¹¹ The first year of its offering (1936-37) there were included lessons in three foreign languages—Spanish, French, and German. These language programs had been broadcast by KFKU for several years previous but not during the afternoon "School of the Air" period. A study of Shakespeare and a music appreciation period also were presented. From a questionnaire sent to the schools and other potential listeners over the state at the end of the first school year of these programs, it was found that the

¹¹ See Atkinson, *Broadcasting to the Classroom by Universities and Colleges*, pp. 100-3.

lessons in foreign languages had been received well. The study of Shakespeare was found to have been of interest to a limited group of listeners, while the music appreciation course was indicated as being the most popular "School of the Air" feature at that time having already been on the air for at least a part of twelve years and as a continuous feature for the previous seven.

The "School of the Air" has included the three foreign languages as well as studies of American literature, Shakespeare, appreciation of music masters, and vocational guidance. Special drills in pronunciation and the basic rules of the Spanish, French, and German languages as well as their cultures have been given by faculty members. Several phases of American literature (including novel, drama, ballad, biography, and poetry) have been discussed by faculty members of the English Department each week. In the Shakespearean broadcasts special attention has been given to the historical background, source of plot, theatrical history of the time, and to famous lines and scenes from the plays.

A series of fifteen vocational guidance talks first was given in 1937-38 with more than fifty Kansas high schools within the KFKU listening area requesting that this radio work be continued. The 1938-39 series included four general talks entitled: "Vocational Values," "Personality Development," "A Useful Speaking Voice," and "An Inventory of Capacities." These were followed by broadcasts concerning specific vocations: "Teaching as Life Work," "Social Welfare," "Chemistry," "Medicine," "Engineering," "Business," "Law," "Technician's Training," and "Journalism." A new 1938-39 "School of the Air" feature was a series of talks addressed to high school students on the "Development of the Art of Printing," sponsored by the Department of Journalism and

presented by one of its faculty members. These "School of the Air" programs have been presented each school day, Monday through Friday, from 2:30 to 3:00 p. m.

In addition to the "School of the Air," the KFKU broadcasting schedule has included many of the more important events of the academic year, such as the all-music vespers, debates, football games, Kansas Relays, Mid-Western Music Competition Festival, baccalaureate sermon, commencement address, concerts by the band, orchestras, glee clubs, a capella choir, and various ensemble groups.

The "University of Kansas Roundtable" has been presented each week as a half-hour discussion by three speakers on current social, economic, and political problems. These are selected from the University faculty, with guest speakers from near-by communities frequently invited to participate. The "Background of the Current Political Scene," prepared and presented by faculty members from the Department of Political Science, has traced the historical development of events leading up to the present political scene and their influence upon current events.

Unusually fine cooperation has existed between the University of Kansas and the Lawrence Public Schools. The latter regularly have used KFKU broadcasts to supplement classroom work. Both teaching staff and students have presented a considerable number of programs as, for example, a series of nine talks by a junior high school principal on "Educating Your Child Today," offered especially for teachers and parents. Dramatizations of the Office of Education scripts have been used at times by the Lawrence City Schools. During 1938-39, for example, thirteen of these public school broadcasts of various types were presented over KFKU.

KFKU is owned and operated by the University of Kansas as an educational and noncommercial enter-

prise. A radio committee, composed of University faculty members, forms the policies of the station. Broadcasting activities are directed by Harold G. Ingham, Director of the Extension Division and chairman of the radio committee. Mr. Ingham has an assisting staff which includes Miss Mildred I. Seaman, Program Director, a chief operator, two or more student announcers, and two or more student operators.

KFKU publishes a detailed schedule of its programs in the monthly *University of Kansas Newsletter*, edited by the Extension Division. This has a mailing list of approximately 2,500, including all school administrators within the listening area of KFKU. In addition, weekly listings are sent to the local newspapers and to twelve newspapers in near-by communities. Special mimeographed publicity has been sent to a select mailing list for each series of programs. A weekly listing of all programs is sent to the *Radio Guide*.

MINNESOTA

Minnesota, due to the leadership taken by the broadcasting management at the University of Minnesota, has become one of the most active of the American states in an organized state-wide development of education by radio. The *Minnesota School of the Air*, under the leadership of its director, E. W. Ziebarth, has been gaining recognition as one of the major broadcasting-to-the-classroom projects in the United States. This is a comparatively recent development that now involves not only Minnesota, but also parts of Iowa, North Dakota, South Dakota, and Wisconsin, due to the present carrying of these school-day programs as network features. Since the fall of 1938, the Minnesota Department of Education has been listed

as a cooperating and sponsoring organization, although this relationship has been more nominal than otherwise. The definite responsibility for the development of the *Minnesota School of the Air* rests with the University.

* * *

Dr. Atkinson, in his 1939 study, described the radio activities of three Minnesota public school systems: Duluth, Minneapolis, and St. Paul. *Duluth* had used radio to some extent previous to the 1937-38 school year when this work became more definitely organized. The broadcasting plan has been to have a different school present the program each week. The administrative policy favors the featuring over the air of children rather than teachers except where the superintendent or other important officials are scheduled to speak in a special broadcast.

After some years of experimentation, *Minneapolis* launched an extensive all-around radio-education development in 1937. It should be noted that the broadcasting stations of the Twin Cities, in the past, have proved themselves, with very little question of doubt, to be the most cooperative with educational leaders of anywhere in the United States. Members of these station personnels, without cost to the educational groups, oftentimes have gone out to instruct both college and high school students in the arts and techniques of radio program presentation. The commercial stations have been very liberal in their allotment of free time, and one, KSTP (St. Paul), at considerable expense, has run conferences or clinics for teachers interested in the educational possibilities of radio.

Dr. Atkinson describes some of the more significant of the Minneapolis developments as follows:

This kind of class work, known as radio workshop, has been developed and carried on regularly in nine of the Minne-

apolis high schools. It has been distinctly the student's project, under the direction of teachers (usually drama), most of whom have had radio training. Mrs. Towne, as the Radio Specialist, contacts both teachers and stations. She makes the arrangements for broadcasting, rehearsal, and audition. Subject and material for the programs of these workshops have been left entirely to the judgment of the students and teachers, and to date nearly all departments of the Minneapolis Public Schools have been included.

The "Learn by Doing" music and creative arts series has been somewhat unusual in that two announcers (one boy and one girl) have been used in the preliminary dialogue pertaining to the subject of the broadcast. This has proved a means of developing talent for announcing and also an attention-getting device. These announcers have been chosen by Mr. (Tom) Rishworth after an audition has been held for that particular purpose. This series has brought forth unusual literary ability as well as a marked showing in original music composition.¹²

During the 1936-37 school year an educational radio policy was established in the *St. Paul Public Schools*. The committee system put into effect to govern the development of this work is described as follows:

Development of this activity was continued during 1937-38 under the direction of a Central Radio Committee, which in reality functioned as two committees. One determined policies and established rules and recommendations for the conduct of all radio activities. The other, in the form of a sub-committee, concerned itself with the actual preparation of radio scripts, presentation of programs, assignment of subjects, selection of manuscripts submitted from various schools, and similar duties.¹³

* * *

The records show, exclusive of the universities and colleges described below, that Minnesota has had but

¹² Atkinson, *Development of Radio Education Policies in American Public School Systems*, p. 92. See also pp. 91-5, 125-9, 165-6.

¹³ *Ibid.*, pp. 125-6.

one "educational" standard broadcast station. The *William Hood Dunwoody Industrial Institute* trained many radio operators for the Navy and hundreds of Signal Corps men for the Army during World War I. This work, of course, was done in code because speech broadcasting had not been developed to any considerable extent by that time. Interest continued after the War, and resulted in the securing of a standard broadcast license to operate a 100-watt station on May 9, 1922. The station was sold on September 4, 1931—thus, the Institute was licensed to operate its transmitter for a period of nine years, three months, and 26 days. The original idea was to broadcast courses of the Institute on an extension basis, but the Institute officials soon discovered that radio at that time was being used almost entirely for the satisfactions derived from getting distant stations or for entertainment. Limitation of time on the air also handicapped plans for educational programs, so the station finally was sold.

* * *

Six Minnesota universities and colleges have held license to operate standard broadcast stations — the University of Minnesota sharing with the University of Wisconsin the distinction of being the first among American educational institutions to get official authorization from the Federal Government. This was on January 13, 1922 — lacking just two days of being four months after the first of all standard broadcast station license was granted to WBZ (Springfield, Massachusetts). Today (1943) two of these six institutions still operate their own stations—the University and St. Olaf's College.

Augsburg College (then known as *Augsburg Seminary*) held license to operate its own station for a period of one year, seven months, and 26 days between May 10, 1923, and January 5, 1925. Radio interest had begun in 1916 when a licensed radio operator

joined the faculty and began operation of an amateur station on the campus. Much long-distance communication was carried on. This pioneer enthusiasm grew to such an extent that students raised funds for the purchase of a transmitter that later was licensed by the United States Department of Commerce. Entertainment and educational features, as well as religious services, were broadcast until the license was allowed to expire without effort being made to renew it. Since then the College has done some occasional broadcasting over Twin City commercial stations, but no definite year-after-year organization for this work has been established.

Carleton College held license to operate its own station for a period of 10 years, four months, and four days beginning December 22, 1923, with deletion on April 25, 1933. Broadcasting during this time was distinctly of an educational nature being principally addresses, music, and accurate time service furnished from the Goodell Observatory on the campus. During the station's period of operation, no commercial time was ever sold. Civic organizations were given free use of its facilities, which were also used as a laboratory for advanced students in the field of high-frequency communication and related subjects. During the existence of KFXM as a Carleton College project, Dr. C. A. Carver was the Director.

Carleton College shared time on the same channel with the University of Minnesota and St. Olaf College, as well as with a Minneapolis commercial station, WRHM. A splendid spirit for cooperation existed among the three educational stations, but relationships with commercial stations were not so agreeable. There was a constant shifting of the assigned frequency. Nighttime broadcasts were interfered with by distant stations, while daytime hours were so limited that the College could not plan its educational services with

any degree of regularity. Some of these difficulties are described in greater detail later under the University of Minnesota section. Difficulties over unsatisfactory frequency assignments, interference and lack of cooperation of commercial stations, expensive litigation, and excessive costs of operation all led to the decision to turn over the Carleton College channel rights to the two other educational institutions. This was done without compensation.

Concordia College held license to operate its own station for a period of two years and three months beginning December 15, 1922, with deletion on March 4, 1925. Interest among a few students led to establishment of this transmitter. The programs broadcast were educational, religious, and musical in nature. However, with no permanently organized and financed plan of action behind it, deletion by the Radio Division, United States Department of Commerce, was inevitable. The transmitter was thereupon turned over to the Physics Department for instructional purposes. Since relinquishing its license in 1925, Concordia College has used the facilities of WDAY (Fargo, North Dakota) for broadcasting its chapel exercises five times a week during the academic year. Other programs are broadcast regularly over this station and also over the facilities of KVOX (Moorhead). Usually these have been religious in nature.

St. John's University held license to operate its own station for a period of five years, four months, and 11 days, beginning September 20, 1924, with deletion on January 31, 1930. This was a development from wireless communication experimentation begun in 1915 when an amateur sending and receiving set was constructed, for which an experimental license was issued. When the radio station was established, musical organizations were used on the broadcasts and a semi-weekly program schedule was carried on for some

time. Advertising of commercial products was not allowed over the station. Programs were distinctly cultural, such as lectures on serious subjects. Several football games also were broadcast. From its beginning in 1915 until 1928, this radio work was under the supervision of Dr. Hilary Doerfler, then chairman of the Physics Department. After his transfer from the University, Rev. Angelo Zankl was put in charge of the technical work and proceeded to rebuild the equipment until ill health forced the abandonment of the work.

New requirements of the Federal Radio Commission that the station be operated twelve months of the year worked a hardship inasmuch as program material was difficult to get except when the University was in session. With limited appropriations and without commercial advertising, financing of the station was becoming a difficult problem, so that no application was made in 1930 for renewal of license.

Since this discontinuance of WFBI, St. John's University has broadcast some programs over KFAM (St. Cloud) featuring musical organizations, interviews of faculty members, and athletic contests. Professor Owen Tekippe, chairman of the Physics Department, explains the present policy as follows:

No concerted effort has been made toward establishing a radio broadcasting policy. It is not necessary for us to make an effort toward publicity, as such, since application for admission to the University has been consistently above our possibility of accommodation.

St. Olaf College owns and operates its own station, WCAL (Northfield), receiving the initial license to broadcast on May 6, 1922. When the ban was lifted on amateur radio at the close of World War I, the Department of Physics began construction and operation of an experimental radio station, using the call letters,

9AMH. Professor Erik Hetle and H. R. Skifter performed most of this early work. In 1919 under new call letters, 9YAJ, and with the addition of Norris Glasoe and Franklin Clement to the staff, new experiments were tried in voice transmission. Phonograph recordings also were broadcast. WCAL at the present time operates two studios—one on the campus and the other at the Augsburg Publishing House in Minneapolis. It shares daytime hours with WLB (Minneapolis), owned and operated by the University of Minnesota. WCAL makes use of a large amount of student part-time help.

The regular student chapel services were broadcast in the fall of 1922, and have been offered every school term since then. In 1924 church services in the Norwegian language were broadcast for the first time, and these have been continued throughout the years since then. In addition to these Norwegian services, each Sunday at 8:15 a. m., church services are broadcast at 10:00 a. m. in other foreign languages—the first and third Sundays of each month in Swedish, the second Sunday in German, the fourth Sunday in Danish, and the fifth Sunday in Finnish. English church services are held each Sunday at 11:00 a. m.

To keep listeners in touch with the activities of the church, a daily broadcast has been presented at 10:15 a. m. in foreign missions, home missions, and kindred services. These have been given in the form of interviews, music, addresses, dramas, and the like. "Forward March" has been a program series under the sponsorship of the Young People's Luther League, the Lutheran Daughters of the Reformation, and the Student Choir. Other religious program series have included: "March of Faith," "Matins," "Luther Seminary," "Vespers," "Choral Hour," "Bible Talks," "Lutheran World," and "Lutheran Hour."

In 1922 what is believed to have been the first broadcast in the United States of a dramatic production was put on the air over WCAL when Shakespeare's "As You Like It" was presented. Both drama and music have been featured since this date.

Series in the schedule of informative talks have included: "Every Day Science," "Parents and Teachers," "Plants and Your Welfare," "Science and Religion," "Social Welfare," "Literary By-Paths," "Nordic Hour," "Farm Hour," "Nordic Cookery," "From the Library," "The World Today," and "Fact Finders." "Book Talks" was first presented by Dr. George Weida Spohn in 1924 and has been continued every academic year since that date. "History of the United States" has originated in the classroom of Dr. Agnes M. Larson.

The following unusual program series were described as follows in the February, 1939, *St. Olaf College Bulletin*:

Coffee Time: In lighter vein is one of the most popular programs, COFFEE TIME, presented by the Department of Norwegian at St. Olaf's College. Members of the department and their guests gather in the studios of WCAL for coffee, and hundreds join in the homes of the Northwest. Conversation is in Norwegian, and, whether serious or humorous, is always interesting. Little-known stories about well-known places and persons are revealed. Norwegian songs are sung as the afternoon becomes a high-spot of the week to many.

Story Time: Believing that the program for children should be designed to promote growth as well as furnish entertainment, WCAL broadcasts a three-a-week series of Story Time programs. These bring favorite stories on Tuesdays and Thursdays from the secular literature that has always been a part of childhood, and well-loved Bible stories on Sundays.

College Bulletin: Designed as a small newspaper of the air, the College Bulletin furnishes a new way for churches and organizations to publicize their meetings, keeps listeners informed as to what meetings they will want to attend. It does away with the difficulty that churches have in telling people outside their own territory of special occasions, and thus increases attendance at their events.

Forensics: Revival of interest in the fields of oratory and debate finds WCAL including in its schedule Forensic features that appeal to the listener. Debates are broadcast, bringing together the men's and women's teams of St. Olaf with those of Hamline, St. Thomas, St. Catherine's, and other colleges. Issues of current interest are discussed, such as the efficacy of governmental pump priming, the amount of politics in relief. Information is presented in a lively, interesting way.

Alumni News: St. Olaf's four thousand far-flung alumni listen with special interest to the weekly ALUMNI NEWS program. Of general interest to all, it brings to them news of friends of college days, arouses a nostalgic longing for the old days at the "College on the Hill." From the thousands who have gone out from St. Olaf, many have made notable contributions to society—their deeds are told, and often they are brought before the microphone to speak of their work. Each department at the college tells of its aims and ideals; thereby a new and broader understanding of the work of St. Olaf and its graduates is made possible.

With the High Schools: WCAL's educational policy does not confine itself to the broadcast of college features. During the year outstanding organizations and individuals from Northwest high schools are presented, thus WCAL believes, offering powerful incentive for better work. Fine programs have featured Minneapolis West High School's national prize-winning choir, Shattuck's talented glee club, high-ranking debators of the Marshall, Minnesota, high school. Encouraging also an exchange of ideas in the field of education, leading high school educators are invited to speak.

WCAL programs offered have been of an educational and religious nature, in keeping with the background of the College itself, which is denominational. The station was completely rebuilt in 1931 at a cost of \$16,000 contributed by friends throughout the Northwest. Changes and improvements were made in 1938 at an approximate cost of \$15,000. WCAL uses newspaper, bulletin, and direct mail publicity.

Dr. Atkinson reports the latest major development of the station in the formation of the *St. Olaf College of the Air* during the fall of 1940. He quotes Dr. Martin Hegland, Director of WCAL, on the plan as follows:

The administration of the project was placed in the hands of a Director of the School of the Air, the WCAL staff, and the Executive Board. . . . Following the action of the Faculty, the Executive Board met and elected me as Director of the School, and approved the series of four courses set forth in the first bulletin of the St. Olaf School of the Air to be given during the second semester as the school year 1940-41.

The original plan called for supervised examinations, but for various reasons the conclusion was reached that this method was too cumbersome. This plan, therefore, has been modified. It should be remembered that the purpose of the St. Olaf School of the Air is not so much to earn academic credit as it is to encourage thoughtful listening. However, the work done is recognized as follows:

- (1) If evidence of thoughtful listening to a good percentage of broadcasts in a given course is offered, a *Certificate of Achievement* from the St. Olaf School of the Air is given. Either one of the following is accepted as such evidence:
 - (a) Answers to examination questions sent directly to the listener in which the notes on lectures or any other material may be made use of.
 - (b) A statement of about 500 words stating in a general way what the listener has learned from the course, or what it has meant to him or her.

- (2) When enough *Certificates of Achievement* have been accumulated to represent thirty *units of instruction*, a *Diploma* from the St. Olaf School of the Air is given.
- (3) As stated in the announcement, *Credits* earned in the School of the Air do not count toward graduation from St. Olaf College. However, individuals who matriculate as regular students at St. Olaf College may consult the Registrar of the College as to possible arrangements whereby college credit may be obtained in the School of the Air.

The question as to how the Registrar may proceed in evaluating courses in the School of the Air for possible credit towards graduation from College is still to be decided. The thought, however, is that when a student has matriculated at St. Olaf College as a regular student and has demonstrated his ability to do College work of satisfactory quality, then the question may be taken up as to any possible credit for work previously done in the School of the Air. Naturally, any such credit would have to conform to the College regulations as to majors and minors, advanced work, and all other regulations governing graduation from St. Olaf College. The thought is that each individual case would be treated on its own merits.¹⁴

University of Minnesota operates its own station, WLB (Minneapolis), receiving the initial license to broadcast on January 13, 1922. Operation of an experimental radio station was begun in 1912, a time when wireless still was confined to the laboratory. Its first use was initiated by Professor F. W. Springer who, in the absence of Dr. George Defrees Shepardson, was acting head of the Department of Electrical Engineering.

Professor Springer had just returned from Berlin, where he had worked under Dr. Adolph Heinrich Slaby. When he supervised the installation of the first

¹⁴ Atkinson, *Radio Extension Courses Broadcast for Credit*, pp. 33-4.

radio equipment in the old Electrical Engineering Building, the short-distance transmission of impulse or code was almost the only use of radio. This experimental station (begun by Professor Springer) was continued by H. M. Turner, an instructor who since has gone to Yale University. Under him the first actual broadcast was transmitted from the University when football games were described via wireless. A spark transmitter was used with regular telegraph signals. The station was developing steadily when, at the time of World War I, all amateur transmitting stations were banned by the Federal Government.

The next important development came under the guidance of C. M. Jansky, Jr., who arrived at the University in 1920. Before he became an instructor in the Electrical Engineering Department, he had been at the University of Wisconsin experimenting with a new radio transmitter using thermionic tubes to generate oscillations. When Mr. Jansky came to the University of Minnesota, the station was using a one-kilowatt spark transmitter tuned to 200 meters. Market and weather reports had been added to communication with other amateur stations, and the University of Minnesota station was pioneering in a field where it was recognized as one of the most powerful and efficient spark sets in the Northwest.

It was under Mr. Jansky's supervision that the station began the building and operation of a continuous wave transmitter with H. C. Torbes as chief operator. Careful extensive investigation showed that, although the vacuum tube transmitter was putting less than half as much power into the air as did the spark transmitter, the reliable coverage was consistently higher. With these results, a more powerful vacuum tube transmitter was built. The new equipment was not confined to telegraphic communication, but extended to radio-telephony as well. The apparatus first was used in

the spring of 1921 to broadcast daily weather reports by radiotelephone. The program schedule of the station was enlarged later to include one concert a week, and during the season, play-by-play accounts of the home football games were broadcast with good reported coverage.

With these developments, radiotelephonic broadcasting on a regular schedule at the University of Minnesota—using call letters, 9XI—preceded that of KDKA (Pittsburgh, Pennsylvania), generally accorded the recognition of being the first broadcasting station in the United States. It thus is possible that the University station (9XI—WLB) is the country's oldest radio-telephone broadcast station which has been in continuous operation since it was established. During this period the equipment also was used for instruction of students in the advanced R. O. T. C., United States Signal Corps, course.

This amateur and experimental work went ahead. In 1923 the Electrical Engineering Department moved into its new building where the broadcasting and experimentation work was housed in a suite of rooms on the third floor. In 1923 the Washburn-Crosby Company of Minneapolis loaned the University a complete 500-watt Western Electric broadcast set, which later became a gift. WLB coöperated closely with WCCO (Minneapolis), which was supported by the Civic and Commerce Association. This arrangement gave the University station the advantage of the studio and wire service of the larger 5,000-watt station. It also provided an alternative broadcasting apparatus, which made it possible to broadcast from both the campus studio of WLB and the Anoka studios of WCCO.

During this time, it is important to note, enough hours of broadcasting were sent out from the University transmitter to warrant the continuance of the station's own transmitting license. Programs broad-

cast under these arrangements (WLB and WCCO) included weekly organ concerts, football games, and some faculty instruction. Professor Edwin Clarke taught a non-credit course in Esperanto, for which more than 2,300 students paid tuition. Another experiment in radio classes was Professor Jules Frelin's class in French, which he "met" once a week.

It soon became evident that the University needed more and better time than it could get with the use of commercial facilities. The good evening hour which first was assigned to WLB for broadcasting informative programs was changed as advertising demands encroached upon it. Finally, the only available time was a practically useless late-evening period, which had to be refused. There was an added difficulty of censorship by the commercial station, which inhibited the freedom necessary for unbiased educational broadcasting. As a result, the University of Minnesota went back to using WLB for all broadcasting. Since this time a few of the University programs have been picked up and rebroadcast by commercial stations, but all these have originated over the WLB transmitter.

In the spring of 1926, the late-President L. D. Coffman appointed a Radio Broadcasting Committee to determine the broadcasting policies of the University. Its members were chosen from the faculty and administrative staffs. At the recommendation of this group, activities of the WLB staff were divided into: (1) program production and presentation, and (2) development in installation of new equipment.

For an account of the controversy for more and better time which finally won for WLB its present position at 760 kilocycles, the best available source is the *Biennial Report of the General Extension Division, University of Minnesota, 1936-1938* published in May, 1939, which states:

The University's first broadcasting had been done on a wave length of 375 meters. Somewhat later, agricultural reports were broadcast on 485 meters as well. Following the second Radio Telephone Conference in 1923, the University was assigned a frequency of 1080 kilocycles (278 meters). This assignment was shared with station WHDI of the William Hood Dunwoody Institute. In June, 1927, the Federal Radio Commission shifted both WHDI and WLB from 1080 kilocycles (278 meters) to 1220 kilocycles (245.5 meters). This shift was accepted by the University at that time under protest and with much misgiving as it was felt that the new assignment was much poorer than had been previously enjoyed. Subsequent studies and tests have shown that these misgivings were thoroly justified.

In the fall of 1928, in response to a petition of the three educational broadcasting stations of the state, the Federal Radio Commission made a reallocation of time and channel to them, by which station WCAL (St. Olaf College, Northfield, Minnesota), KFMX (Carleton College, Northfield, Minnesota), and WLB (University of Minnesota) were all assigned 1250 kilocycles together with the commercial station WRHM (Minnesota Broadcasting Corporation). A time block arrangement was entered into by these four stations, which gave WRHM approximately five-sixths of the time and the three educational stations the rest.

Despite a number of petitions filed by WRHM for more time, this arrangement continued until the fall of 1933, when KFMX discontinued broadcasting. A new time block arrangement was then entered into by the three remaining stations by which a roughly equal division of KFMX time was distributed among them. This gave WCAL about nine hours a week, WLB a trifle less, and WRHM the remainder.

On August 3, 1936, WLB made application to the Federal Communications Commission for change in frequency from 1250 to 760 kilocycles and for authority to install new equipment and increase power from 1 kilowatt to 5 kilowatts, sharing daylight time with station WCAL (St. Olaf College, Northfield, Minnesota). This petition

was granted October 20, 1936. On November 20, 1936, in response to protests from the National Battery Company (KSTP), Dr. George W. Young (WDGY), and Mr. Edward Hoffman (WMIN), the broadcast division of the Federal Communications Commission suspended its order of October 20, 1936, and on February 2, 1937, set it aside. On February 16, 1937, the broadcast division of the Federal Communications Commission dismissed a motion filed in behalf of the University of Minnesota (WLB) by its attorney, Mr. Horace L. Lohnes, to strike out the protest of the National Battery Broadcasting Company (KSTP) to the action of the Commission of October 20, 1936, in granting the above application without a hearing. In the meantime the protests of Dr. George W. Young (WDGY) and Mr. Edward Hoffman (WMIN) had been withdrawn. A hearing on the merits of the petition of the University of Minnesota (WLB) was set for May 5, 1937.

The decision of the Federal Communications Commission, rendered in November, 1937, was favorable to the University. As a result, WLB shares daylight time on a new channel on the broadcasting band (760 kilocycles) with WCAL (St. Olaf College, Northfield) at a time ratio of two to one. This new arrangement has more than quadrupled the time occupied on the air by the university broadcasting station.¹⁵

WLB moved into its new quarters on the ground floor of Eddy Hall on April 10, 1939. Additional space has been a pressing need with the expansion of broadcasting on 760 kilocycles. The new studios were planned for maximum efficiency in using broadcast time allotted to the station. There are two large studios (24 x 43 feet and 20 x 24 feet) for use in musical and dramatical broadcasting. Interviews, news programs, and talks originate in a third small studio (6 x 9 feet). There also is a small audition studio (9 x 10 feet) that adjoins a combined audition room and office from

¹⁵ See pp. 38-9.

which it is possible to regulate the controls for a rehearsal and to direct performers through a talk-back system without assistance from the master control room.

There are two control rooms, with entirely independent equipment. The larger set of controls is arranged so that the three smaller studios are grouped around it; the auxiliary control is next to the largest studio, which is separated from the others by a hall. The staff occupies seven offices. A public reception room makes it possible to hear the broadcasts which the station carries. The news transmitter—located on the University Farm Campus—is air-cooled, at present being the only one of its kind in the Twin Cities.

Extensive arrangements have been made for carrying campus and city broadcasts, with WLB having lines to most of the five Twin City (Minneapolis and St. Paul) commercial stations. There are remote control connections (either direct or easily available) to all the buildings on the University campus. The direct line to Northrop Auditorium has been utilized in the broadcasting of the Minneapolis Symphony Orchestra concerts. During the winter of 1938-39, a series of symphony programs—carried by all stations in the state—was originated with WLB. Perhaps the greatest virtue of the new studios has been that they are planned for flexibility in arranging broadcasts. Six complete simultaneous broadcasting set-ups can be accommodated—all four of the studios and two remote control channels conceivably might be in use at the same time.

Three administrative fellowships have been granted to graduate students who spend half of their time at WLB while working for their graduate degrees. These students have been chosen from pertinent specialized fields such as music, speech, and journalism. As a training in radio technique, three student announcers

augment the regular staff. The technical staff consists of a full-time engineer who has the help of ten part-time student operators. The work of a full-time secretary was supplemented by the use of Work Progress Administration employees, some of whom were engaged in an evaluation project to determine the coverage and effectiveness of the station's work.

The programs broadcast by WLB have been classified in three broad categories by E. W. Ziebarth, Director of the *Minnesota School of the Air*. Under an arbitrary division, these may be described as follows:

Direct Classroom Use: The *Minnesota School of the Air* was begun in September, 1938. At that time programs were planned to supplement work in high school classes in English and vocational guidance, junior high school geography and history classes, grade school current events, and primary grade reading. These programs have not been meant as substitutes for subjects in the regular curriculum, but have been intended as supplementary and motivating material. From the start, the *Minnesota School of the Air* has carefully integrated its broadcasts with the *State Course of Study*. The programs have been approved by the State Department of Education and the Radio Committee of the Minnesota Education Association.

Adult Education Programs: Those designed specifically for adult education have been the "Music Appreciation" series, conducted continuously since 1930; the "American Literature Series," which has included talks by prominent University lecturers; broadcast of classroom lectures in "American Government"; a series of talks by the faculty of the School of Business Administration on the problems of the ordinary business man; the "University Farm and Home Hour," originating on the farm campus with the assistance of the faculty and in cooperation with the U. S. Department of Agriculture; and the broadcast of all the convocation speeches of the year, presented to the student body by such people as Mary Ellen Chase.

General Interest Programs: Typical of this group has been the "Bride's Program," a series broadcast to help prospective brides in planning their weddings, trips, homes, and furnishings. The large department stores, the University Department of Home Economics, and the various Twin City experts on buying and planning have appeared on informal interview forums for these series. Musical series, both recorded and "live," have comprised almost 50 per cent of the WLB broadcasts. In the longest of the drama hours, the "WLB Playhouse," most of the plays have been important and classical drama ranging from Wilde to Shakespeare. All the news broadcasts can be classified as general interest programs. These include: (1) a United Press wire report edited by the staff of the University paper, the *Minnesota Daily*, and carried through the academic year, and (2) a daily program of news interpretations, drawn from various news sources.

The *Minnesota School of the Air* became a network feature on September 23, 1940, at the beginning of the third year of the project. Relative to its administration Dr. Atkinson quotes Mr. Ziebarth as follows:

The administrative set-up of the Minnesota School of the Air is a relatively simple one in which I take the responsibility for planning programs with the schools, for the determination of objectives, for the determination of the content areas which the programs are designed to supplement; and to make arrangements with the network as well as the individual network affiliates for carrying these broadcasts.

In making plans for the programs, we of course consult committees drawn from the public schools in this area, as well as committees made up of members of the University faculty. The entire series is then integrated with the general program service of WLB, the time for the broadcasts being chosen after very careful survey of the most convenient listening hours for schools in our service areas. (I say areas rather than area because the addition of the North Central Broadcasting System network has made possible the extension of our service so we now cover large

areas in neighboring states.) Stations added to the network this year make possible coverage in Minnesota, North Dakota, South Dakota, Wisconsin, Iowa, and a limited area in northern Michigan.

Our primary difficulty is the far from unique one of an inadequate budget, but we are helped by an NYA script writing project which engages in research and does some writing for the series. We use many student actors for the dramatic broadcasts. The broadcasts proper are under the supervision of our dramatic director and junior production men. The Radio Guild often furnishes sound men as well as assistant production people, and this organization of student and semi-professional radio people cooperates fully in every way.

Each semester we have circulated a state-wide questionnaire in order to determine school-listening patterns, most useable programs, and to get teacher and administrator evaluations. The following year's broadcasts are planned after a careful examination of these responses.¹⁶

MISSOURI

Missouri, due to the leadership since 1939 as taken by the State Department of Public Schools, has gone further in integrating the state elementary course of study with the CBS *School of the Air of the Americas* program than any other state. This development is described as follows:

The first organized effort to bring to the attention of administrators and teachers in Missouri the fact that radio has a definite educational use in a supplementary capacity was originated in 1939-40, with the publishing of a bulletin entitled "The Use of Radio as a Supplementary Educational Agency." This bulletin was distributed to teachers and administrators throughout Missouri and, at the request of

¹⁶ Atkinson, *Broadcasting to the Classroom by Universities and Colleges*, p. 63.

major networks, was rather widely distributed in other states to be used as an example for similar publications. This first bulletin dealt with the fundamental philosophy of the use of radio educationally. It then presented a plan of integration with the elementary school course of study whereby outstanding "in-school period" broadcasts were correlated with various units of study . . . Reports indicate that many teachers utilized last year's bulletin in classroom teaching procedure.

A state radio advisory committee was appointed by Lloyd W. King, state superintendent of schools, to further develop the use of radio. This committee included representatives from radio stations in addition to administrators and teachers. At recent meetings suggestions were made for stimulating the use of radio and placing it in its proper educational sphere.

Following this meeting an experimental demonstration was planned whereby it would be possible to have an actual classroom situation in which radio was utilized presented before representatives of the teaching profession. The first of such meetings was held at Warrensburg Teachers College and, although inclement weather made a large crowd impossible, the demonstration was well received. Both "in-school" and "out-of-school" broadcasts were utilized in this demonstration. The cooperation of the training school of the college made possible an actual classroom situation.

Further development of the use of radio was seen in the extension of the broadcasts inaugurated by Lloyd W. King, state superintendent of schools, through the State Department of Education. These broadcasts, "Missouri Schools in Action," were heard each Sunday during the school year over seven Missouri stations. They dealt primarily with home-school relationships in addition to disseminating information concerning areas of education.¹⁷

¹⁷ *The Use of Radio as a Supplementary Educational Agency in Missouri, Volume II, 1941-42*, p. 6. This is quoted from Carroll Atkinson, *Radio in State and Territorial Educational Departments* (Boston: Meador Publishing Co., 1942), pp. 50-3.

Dr. Atkinson, in his study of 126 American public school systems, included three Missouri cities.¹⁸ In the fall of 1935 *Columbia* began experimentation with music appreciation programs for classroom listening, using student talent in production. Later, this work included other school subjects. In 1936 the plan was initiated to broadcast a program series representing a typical family's relationships with the school system. These parts, likewise, were taken by students.

St. Louis was comparatively slow among the major American cities to start its radio activities along organized lines, allowing such civic groups as the Chamber of Commerce to do the sponsoring of public-relations programs but cooperating whenever asked. This has been a typical attitude of many city school systems. *Springfield*, on the other hand, since 1936 has had a very active development in the utilization of radio as an educational tool. High school teachers, community leaders, and even persons from outside of the city have aided in some of these broadcasts but most of them have been student-presented. Typical of these have been safety broadcasts, a discussion to launch the school activity ticket sale, an explanation of the work of the student council, a conversation about the archery club, classroom discussions of the C. I. O. and other current economic problems, as well as programs of poetry and music.

* * *

During the earlier history of broadcasting, educational institutions and organizations in Missouri held an unusually large number of standard broadcast licenses. Only two of these are in operation during 1943. Altogether, 12 of these educational stations attempted operation of a program service. These in-

¹⁸ Atkinson, *Development of Radio Educational Policies in American Public School Systems*, pp. 76-7, 178-80, 247-9.

cluded one automobile school, a religious organization, two high schools, a junior college, four of the state's five State Teachers Colleges, a liberal arts college, and two universities.

The *Sweeney Automobile School*, of Kansas City, held license to operate its own station seven years, seven months, and nine days, beginning May 10, 1922, with the license being transferred to commercial operators December 3, 1929. There are no available records concerning type of educational broadcasting as conducted.

Relative to the station operated today principally for religious purposes by *Evangelical Lutheran Synod*, of St. Louis, T. J. Slowie, Secretary of the Federal Communications Commission states:

You are advised that the initial license of Station KFUO was dated January 29, 1925, and was issued in the name of Concordia Seminary, St. Louis, Missouri. On June 1, 1927, the records were changed to show the licensee as Concordia Theological Seminary. The location of the station was changed to Clayton, Missouri, on January 31, 1929, and on April 19, 1929, the name of licensee was changed to Evangelical Lutheran Synod of Missouri, Ohio, and Other States, Rev. R. Kretzschmar, Chairman Board of Control of Concordia Seminary. This name was modified on March 22, 1940, to show the licensee as Evangelical Lutheran Synod of Missouri, Ohio, and Other States, in which name the station now operates.¹⁹

* * *

Two Missouri high schools also attempted to operate standard broadcasting stations. *Cleveland High School*, of St. Louis, held license to operate for only two months and 26 days between September 30 and December 26, 1924. The original plans could not be carried out, so no broadcast transmitter was built. A few portable sets were used on 20-watt power, but this

¹⁹ Letter, September 30, 1942.

experimentation proved to be unsatisfactory. The *Moberly High School Radio Club*, between February 19, 1924, and June 10, 1925, held a license for 5-watt power . . . probably the lowest power for which license was ever authorized. Later, for a shorter period between October 12, 1925, and January 28, 1926, a license was issued for operation of the same equipment, but this time it was assigned to *Moberly High School*. Thus, licenses were held for a total period of one year, six months, and 28 days. This radio work was mostly student "puttering" with the equipment.

* * *

Stephens College, of Columbia, held license for a period of six years, nine months, and 17 days. The license originally was issued to the Etherical Radio Company, Bristow, Oklahoma, on March 13, 1925. This station was deleted September 30, 1925, and the transmitter was sold to Stephens College and moved to Columbia, Missouri, with license being granted on October 16, 1925. The station was assigned to KFRU, Incorporated, on August 2, 1932, and is being operated today as a Blue Network outlet in Columbia. The College had difficulty in maintaining a program schedule because of the small amount allowed in the budget for broadcasting. There were also some complaints of interference with other stations when the College transmitter was on the air. All this contributed to the decision to dispose of the station.

Four of Missouri's five State Teachers Colleges have held standard broadcast licenses for brief periods of time. *Central Missouri State Teachers College*, of Warrensburg, held its license six months and nine days between November 3, 1924, and May 12, 1925. Since the project was not considered worthy of further appropriations, it was dropped from the budget. *North-east Missouri State Teachers College*, at Kirksville,

held its license for three years, seven months, and 24 days between December 7, 1926, and July 31, 1929. The equipment was secured from the local Chamber of Commerce. Only 15 watts of power had been authorized, so the attempt was made to secure license on a 100-watt basis. When this was refused, the authorizations was allowed to expire.

Southeast Missouri State Teachers College held license for two years, six months, and one day between January 16, 1923, and July 17, 1925. The head of the Physics Department built the station and operated it throughout its existence. Addresses by faculty members and similar features made up the program schedule. *Southwest Missouri State Teachers College*, at Springfield, held license twice to operate standard broadcast stations for a total of one year, three months, and 22 days.²⁰ Engineering students did the work in this project with about 50 programs being broadcast under the first license but only a few under the second. Financial difficulties in maintaining the transmitter in operation caused its eventual deletion.

Missouri Wesleyan College, of Cameron, now merged with Baker University, at Baldwin, Kansas, held license for exactly two years between June 14, 1922, and June 13, 1924. Originally, this station was operated in partnership with a local commercial company, and finally was taken over by the College alone. Financial difficulties doomed the project.

St. Louis University operates its own station, WEW (St. Louis), receiving the initial license to broadcast on March 23, 1922. Actual broadcasting over the transmitter had begun the previous April 26, 1921—approximately eleven months before official authorization. In 1912 the Science Department had installed a

²⁰ Licensed December 2, 1922; deleted November 11, 1923; re-licensed January 18, 1924; deleted May 31, 1924.

wireless sending-and-receiving set to keep in constant contact with the seismological stations throughout the country. This station was known as 9YK and was used to check seismological readings with at least two other stations in order to verify the exact location of earthquakes.

By order of the Federal Government, 9YK was dismantled in 1917 upon the entry of the United States into the World War. All communication systems were taken over by the Federal Government at the same time. Rather than waste its knowledge and rich background in the communications field, St. Louis University offered its services in radiotelegraphy to the United States Army Signal Corps for training purposes. There were 380 enlisted men who attended classes to study principles and law governing wireless. Brother George E. Rueppel, S.J., (still chief engineer of WEW in 1943) taught these men how to dismantle and rebuild wireless equipment. Practice in broadcasting was carried on the silenced antenna and apparatus of 9YK.

Shortly after the World War ended, the University again applied for federal authorization to rebuild 9YK. At about this time the United States Airmail Service was beginning so that when the St. Louis-to-Chicago route was inaugurated, the Federal Government again took control of 9YK while its own station was being erected in order to relay weather, livestock, and grain reports from the Pacific Coast to Washington, D. C.

During the World War the De Forest invention—the third element to make possible radio tubes—led to another great development in wireless telegraphy, namely, radiotelephony. The Radio Department of St. Louis University was among the first to begin experimentation with it. These tests led to the establishment of 9YK as a radio station in the sense that

one is known today. The first broadcast took place at 10:05 a. m. on April 2, 1921—a weather forecast and river stage bulletin. Reverend William F. Robison, S.J., then President of St. Louis University, was assisted in that first transmission by Montrose W. Hayes, then Chief of the St. Louis Weather Bureau.

WEW claims to be the oldest station west of the Mississippi River. It has been in continuous operation since its inception nearly a year before its official license date. It further claims to have been the first station to present a regularly scheduled weather forecast and to broadcast market news service by radio-telephone. Henry A. Wallace, Sr., then Secretary of the Department of Agriculture, after learning of the results of these first service programs, introduced them into all the then existing stations throughout the country. WEW has continued these services without interruption since their inception.

In July, 1921, Brother Rueppel presented the station's first broadcast of phonograph music. When the Department of Commerce took over all American broadcasting, it began licensing every station, assigning each to certain frequencies, and giving specific hours in which to operate. Call letters were assigned, with WEW being the identification given to 9YK.

As its first contribution to educational broadcasting, WEW presented talks by specialists and members of the University faculty on many subjects taught on the campus. No complete official record of these talks has been found, however, so that it is impossible to list the subject matter, time, mode of presentation in the form of a detailed accurate history of this development. The earliest series of educational talks is believed to have been presented by a group of students in the School of Divinity, who offered discussions about literary subjects once each week—the series beginning in 1923.

Numbered among the first educational features begun at WEW, and carried through the years, were the daily farm broadcasts and the housekeeper chats, both prepared by government experts. Other series which have appeared and disappeared from the regular broadcast schedule have been: (1) "Parents' Forum," dealing with subjects of child welfare; (2) "Science Series," devoted to the presentation of news of scientific developments; (3) "Farm School," giving instruction in various farm activities such as dairying, stock raising, and poultry problems; (4) "Amateur Radio Forum," providing short courses in the theory and practice of amateur radio; and (5) "Travelogues," a series of short travel talks bringing entertainment and education closer together.

Then followed radio courses in English, history, psychology, and other subjects taught in the University. These were all approached through talks ranging from two to fifteen minutes in length. During 1931 a series of discussions, presented by members of the English Department, dealt with the chief English and American poets.

No accurate account of these first educational experiments via radio has been kept, but from various sources it has been gathered that most of these early endeavors to present educational programs were through talks—some with music and accompanying remarks preceding and following the actual presentation. A group of typical programs examined and averaged showed that the time on the air during 1918 was eight hours weekly, seven and one-half of which were used for educational purposes. This apparently is the amount of time used throughout that year, and all indications point to a proportionate use of time during the preceding years. During the fall and winter of 1931-32, WEW's operating time was increased to twenty-three hours weekly, of which twenty were used

in presenting educational and instructional programs.

Early in 1932 another large increase in time on the air brought an appreciable increase in the time allotted to educational broadcasting. Many of the University departments signified their agreement to broadcast talks and lectures during the semester that had just begun. This was the first time that a complete line-up had been made of these various University departments. Lectures were given on such distantly related subjects as anthropology and economics, with others running from journalism to philosophy, education, history, English, physics, mathematics, and a group of programs about the English ballad. These continued through 1931-32. In October, 1932, another expansion was undergone, with a definite revision of the program idea. Less emphasis was placed upon the quantity of programs and more upon their quality and appropriateness. Educational broadcasting became more systematized, with educational features being interwoven with entertainment in order to maintain interest and listening strength.

The "University of the Air" came into existence in 1932, bringing with it a series of programs featuring daily-except-Sunday half-hour presentations from many different schools and departments of the University. Senior students of the St. Louis University Law School presented "The Supreme Court and the Constitution." The "Social Order Forum" offered talks by outstanding professors and laymen of St. Louis. "Science News of the Week," "The Book Review," and numerous other special periods were devoted to various subjects.

On September 12, 1937, a complete reorganization process was begun at WEW. Broadcasting facilities and personnel were enlarged to accommodate commercial programs along with the established entertain-

ment, educational as well as service features. The "University of the Air" was absorbed into WEW's general broadcasting activities as they exist at the present time. The radio station was installed in modern air-conditioned quarters occupying the entire first floor of the University Law School Building. The latest type RCA transmitter—fourth in the station's radiotelephony history—and studio equipment have been installed at an approximate cost of \$35,000.

University of Missouri held license to operate its own station for a period of two years, 11 months, and eight days between April 13, 1922, and March 21, 1925. This activity was initiated in 1920 when members of the Reserve Officers' Training Corps became interested in radio, installed equipment furnished by the Federal Government in their headquarters building on the campus, and experimented with wireless transmission as a means of training men in military radio communication. Students in the College of Engineering cooperated in this work. Outside contributions helped to expand equipment of the station. Two licenses were received for experimental station operation, but these were not authorized to broadcast entertainment features. A license issued April 13, 1922, permitted broadcasting of weather reports and programs using campus talent, but this activity was never organized definitely. Colonel John F. Williams (later Assistant Chief, National Guard Bureau, Washington, D. C.) had general supervision of this work.

Since abandoning operation of its own station as an experimental project through the joint efforts of the R. O. T. C. and the College of Engineering, the University of Missouri has broadcast from time to time over KFRU (Columbia) and KWOS (Jefferson City). The College of Agriculture, in cooperation with the United States Department of Agriculture,

supplies all Missouri radio stations with general agricultural news and talks on timely home and farm topics.

NEBRASKA

Nebraska, in the history of radio, has been one of the most enthusiastic of the earlier pioneers among the American States. At the very beginning of the Twentieth Century both the University of Nebraska and Nebraska Wesleyan University made valuable contributions through experimentations, while the Department of Public Instruction has shown active interest in the educational utilization of radio. Like pioneers in many other fields who do the necessary groundwork for later spectacular progress, Nebraska in 1943 seems to have very little to show for these earlier efforts — there is not a single educationally owned standard broadcast station in the state today. Licenses, however, have been held by six of them: two high schools, one state teachers college, one liberal arts college, and the two universities mentioned above.

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Dr. Atkinson, in his 1939 study of radio developments in 126 American public school systems, included *Omaha* as his only Nebraska city.²¹ Incidentally, it was in *Omaha* that the two high schools held standard broadcast licenses. *Central High School* held its license for a period of three years, seven months, and four days between February 14, 1923, and September 18, 1926. Regular class work in radio was offered by the school with the inauguration of the station. Students formed a Central High School Radio Club which

²¹ Atkinson, *Development of Radio Education Policies in American Public School Systems*, pp. 140-2.

presented programs each Monday from 8:00 to 9:30 p. m. These consisted of orchestral presentations, vocal recitals, dramatic readings, plays, discussions, and lectures. The license reverted to a man who had held authorization under the same call letters prior to the granting of such license to the high school.

Technical High School held its license for four years, four months, and 22 days between March 3, 1924, and July 25, 1928. The equipment was used for instruction of students in technical branches of radio and for broadcasting of music, debates, lectures, and similar features. The project, while it lasted, was supported from the general school fund. After deletion of the station the radio course was continued as a high school subject. All broadcasting by the Omaha Public Schools today is over commercial stations, and the work is largely public relations in nature. High school dramatic departments have put on safety skits based upon actual traffic accidents. Along with these dramatic offerings have been instrumental and vocal numbers from high school music departments. The Board of Education also has cooperated with commercial stations in putting on roundtable programs with children as participants.

* * *

Midland College, at Fremont, held license to operate its own station for a period of three years, three months, and 14 days between September 22, 1922, and January 6, 1925. The equipment was donated to the College. Programs offered consisted principally of musical numbers by members of the Music Department and addresses by faculty members. Operation was carried on by a student until his graduation, after which no other sufficiently qualified person was found for the work. Also, a sum of approximately \$6,000 was needed to rebuild the station equipment. Since this money was not available, the license was allowed

to expire. Commercial facilities have been used since that time.

Nebraska Wesleyan University held license to operate its own station for a period of 11 years, two months, and 26 days between May 6, 1922, and August 1, 1932. The University had begun broadcasting daily weather and news bulletins in 1914 over experimental station 9YD, that was financed by direct appropriations from the University budget.²² This work continued to develop until 1917 when the station was shut down as a defense measure during the World War. Radiophone work was begun in October, 1920. Regularly scheduled broadcasts of weather reports, markets, and other bulletins began in November, 1921, using 9YD under an experimental license. The Radio Division, United States Department of Commerce, ruled that this was broadcasting rather than experimenting. The University thereupon was ordered to apply for a broadcast license, which was granted May 6, 1922.

Nebraska Wesleyan University unquestionably is the outstanding example of the determined fight of an American educational institution to maintain its air rights against encroachment on the part of commercial interests. From time of the organization of the Federal Radio Commission in 1927 until the WCAJ equipment was sold to WOW (Omaha) on July 5, 1933, with deletion following on August 1, 1933, the University was forced into numerous changes in channel, power, hours of operation, and expensive litigation in order to maintain its station signals on the air.

It was March, 1927, that the Federal Radio Commission took office. In May it put WCAJ and an

²² The author secured these data from Dr. J. C. Jensen by means of conferences in which papers were examined in order to establish an accurate story. Dr. Jensen was especially helpful.

Oklahoma station on the same frequency . . . without dividing the time. When WCAJ was shifted to 590 kilocycles, it was required to divide time with WOW, a commercial station at Omaha, Nebraska. On February 28, 1930, WOW asked for full time. The Federal Examiner recommended on February 7, 1931, that this request be granted. The Commission, after several months of deliberation, denied the request on May 22, 1931. WOW thereupon appealed to the District Court of the District of Columbia. The Court denied the appeal on February 29, 1932, upholding the decision of the Federal Radio Commission.

Thus the University seemed to have triumphed . . . with the right to continue in peace the development of its educational program. There had been some controversy over the amount of power WCAJ might use. Under the rules of the Federal Radio Commission, decisions were not final so that on May 8, 1933, WOW again filed application for WCAJ facilities. Funds of Nebraska Wesleyan University were too badly crippled by the depression to permit both the expenses involved in carrying on a continuous legal battle to maintain a volunteer public educational service and the maintenance of a high-class program service. Hence, rather than have to fight in Washington, D. C. at frequent intervals, the University Administration considered it better to sell the station. Thus, for less than the value of the equipment, WOW purchased the air channel rights of WCAJ . . . and another educational station was silenced forever.

Dr. Jensen holds the unique distinction of contributing valuable experimental work in radio communication in both the First and the Second World Wars. He was Director of WCAJ during its entire existence including the period of earlier experimentation in the earlier part of the Twentieth Century. For many years he was at the head of the Association of College

and University Broadcasting Stations. This group placed him in nomination for a place on the Federal Radio Commission on the resignation of General C. M. Saltman, August 5, 1932. At the request of the late Senator R. B. Howell, of Nebraska, on February 3, 1933, the President sent Dr. Jensen's name to the Senate for confirmation. This appointment, like many others by Mr. Hoover, was pigeon-holed by the opposition political party in power in the Senate . . . even though this appointment was distinctly non-political.

It is therefore interesting to compare *Senate Resolution No. 129, Seventy-Second Congress*, with Dr. Jensen's personal point-of-view. The *Resolution* queried and answered: "What recognition has the committee given to the application of public educational institutions?" The Commission answered that from February 23, 1927, to January 1, 1932, 95 educational institutions had received licenses; and that 23 had been 'assigned at the request of the educational institutions to a corporation or person engaged in commercial enterprises.'" Dr. Jensen, for his part, sums up the station operation by Nebraska Wesleyan University as follows:

We pioneered in radio, beginning our broadcasting program in 1921, and did a pretty decent job of it on a strictly educational basis. We carried programs gratis for two other church-connected colleges, for the University of Nebraska, the Nebraska State Teachers Association, the Parent-Teacher Association, the American Legion, etc., yet we were given grossly unfair treatment by the Federal Radio Commission, and finally, as the result of political maneuvering and commercial pressure for our facilities, we were compelled to sell the station in 1933.

Dr. Atkinson credits Nebraska Wesleyan University as being the first among all educational institutions

to have made the attempt to broadcast programs to the classroom. This initial experiment occurred December 20, 1921. He states in his *Broadcasting to the Classroom by Universities and Colleges* that: "While it was only two programs at a time when equipment was at a very crude stage of development, this University undoubtedly deserves the distinction of having made the first attempt, of all education-conscious groups, to broadcast an instructional program to the classroom."²³

Although Dr. Atkinson had spent three years in collecting data for another of his volumes, *Radio Extension Courses Broadcast for Credit*, and, by date of publication, had found only 13 educational institutions which had made this attempt to utilize radio as a formal educational tool, he missed two universities that (after the book was off the press) he discovered had broadcast extension courses for academic credit. University of Michigan and Nebraska Wesleyan University both had attempted, without much success, to broadcast college courses in which credit was granted to those students who fulfilled certain examination and study requirements and who also had paid fees for the service. Neither the Michigan nor Nebraska Wesleyan experiment was successful enough to be repeated, and but few students were attracted to the radio courses.

University of Nebraska held license to operate its own station for a period of four years, 10 months, and 15 days between June 16, 1922, and April 30, 1927.²⁴ Guglielmo Marconi's experiment in 1895 was followed almost immediately by "dabbings" by both faculty and students in several American institutions of higher

²³ See p. 13.

²⁴ Source material for much of these data is found in Volumes 12 and 13, *University Extension News*, University of Nebraska.

education. In what was then known as "wireless," four universities began this work before the start of the Twentieth Century: in 1896, Tulane University of Louisiana and Wittenberg College (Ohio); in 1897, University of Arkansas; and in 1899, University of Nebraska. The first recorded University of Nebraska public demonstration of this pioneer interest was part of the exhibition for "Engineers' Night" on Charter Day, February 15, 1902. This was conducted by E. F. Bliss (then a Senior), assisted by O. J. Ferguson (then a Junior and now Dean of the College of Engineering).

F. C. Holtz (then a Freshman in the College of Electrical Engineering and later one of its instructors) in 1909 built a wireless transmitting set which with the exception of the World War period when the Federal Government prohibited its operation was ready and available for experimental and emergency operation. This transmitter was rebuilt many times. To make it more effective, a 1-kilowatt, 60-cycle, 110-10,000 volt Thoradson T-2 transformer was purchased by the College of Electrical Engineering in the fall of 1914. This transformer was used until the transmitter was discontinued on December 22, 1921. The antenna, which was rebuilt several times, was supported between the top of the 90-foot brick stack of the old power plant and the top of University Hall. It was a flat-top type, of four wires, with a spread of about nine feet. The length was about 150 feet, and it was approximately 90 feet above the ground. The top was tapped at the center, and a lead made the connection between it and an attic in the Electrical Engineering Building.

On November 21, 1916, the first thermionic tubes were obtained. They were called "oscilaudions." Two of them were purchased from a Mr. Rome, who lived in California, and they cost four dollars each. Each

tube was about three-quarters of an inch in diameter, and about three inches long. In addition to a plate and grid, each contained two ordinary tungsten filaments . . . one intended for a reserve. Interest in radio increased considerably when these tubes were received. Mr. Holtz, then an instructor, was able to build a radio receiver that was extremely efficient in comparison with the crystal detector then in use. It was then possible to have radio-telegraph conversations with operators many miles away. Direct communication was carried on with stations throughout the United States, and there was little difficulty in communicating with operators along the Atlantic Coast or as far south as New Mexico.

In the fall of 1916 it was decided to send out regularly, by means of the spark transmitter, weather-road-and-market reports. These went on the air daily except Sunday at about 9:30 a. m. They were continued until June, 1917. In accordance with Federal Government instructions because of the World War, the station was dismantled at this time. After the Armistice, the spark transmitter was put back into service. From then until December 22, 1921, daily weather-road-and-market reports were broadcast quite regularly except during the months of June, July, August, and the early part of September. Hour of broadcast varied from 9:30 to 10:00 a. m.

On February 11, 1920, the United States Department of Commerce issued an experimental station license, good for one year, to the University of Nebraska. It authorized operation on 200 and 375 meters, using 1-kilowatt power, no specified hours, with 9YY as call letters. Renewal, again good for one year, was made on June 23, 1921. This license should not be confused with the standard broadcast authorization first issued June 16, 1922, which permitted the broadcasting of programs for public reception

whereas the earlier licenses were intended for experimental work only. Previous to the granting of the standard broadcast license, the spark transmitter had been operated on 375 meters, so that wave-length was continued in use.

During the spring and summer of 1921, a combination radiophone and continuous-wave radio-telegraph had been built by H. O. Peterson and Allen Weaver (both Electrical Engineer graduates in 1921). The transmitter contained four 50-watt UV203 radiotrons. It is of interest to note that a picture of this particular completed transmitter and of Mr. Peterson appeared on the front cover of the October, 1921, *Wireless Age*. For three weeks, beginning July 13, 1921, phonograph concerts were broadcast daily at 12 o'clock noon and at 7:30 p. m. Operation was under license renewed June 23, 1921, with 9YY as call letters, wave-length of 375 meters, unmodulated output of 100 watts. As a continuous-wave radio-telegraph transmitter, 9YY later had an output of 200 watts.

The American Legion Band played at a local park on Sunday, July 24, 1921, from 6:30 to 7:00 p. m. The Lincoln Telephone and Telegraph Company supplied a telephone circuit between the stand and 9YY, which permitted the broadcasting of the concert. Three microphones picked up the music at the band stand. This was in the nature of an event at the University of Nebraska station because it was the first time music had been picked up and sent over the air waves. Reception of these experimental programs met with some general approval. Many letters were received from listeners in Nebraska, South Dakota, Iowa, Minnesota, Missouri, and Kansas. Programs from 9YY were received at a maximum range of 340 miles, and at that time it was the only high-powered radiophone station operating in its section of

the country. In a letter to *Radio News*, August 2, 1921, H. O. Peterson commented on this.

Mr. Peterson graduated and left the University August 15, 1921. H. H. Heim (Electrical Engineering '22) assisted by B. E. Ellsworth (Electrical Engineering '23) took charge of the station that September. Immediately more history was made as it was the first football season the University games were broadcast from the University station. By means of the spark transmitter, football reports on Saturday afternoon games played in Lincoln were sent over the ether waves, and were received with enthusiasm and great interest by football addicts unable to attend the games. J. A. Brooks (Electrical Engineering '22) watched each game, and telephoned the reports to Heim and Ellsworth, who proceeded to give a play-by-play account of the gridiron action.

Beginning November 14, 1921, market reports and weather forecasts were sent out daily at 9:45 a. m. On May 1, 1922, a special program was broadcast over radiophone 9YY by Dean Ferguson for the benefit of the physics class in Wahoo High School. It was not until 1931, however, that a regular service of broadcasting-to-the-classroom was established, and continued until 1934.

The University received its first standard broadcast license for operation of WFAV on June 16, 1922. This permitted operation at 360 or 485 meters with a power output of 100 watts, and time not limited. The station might broadcast entertainment and weather reports. When Mr. Heim graduated and left the University, Mr. Ellsworth succeeded him as operator-in-charge. The radiophone transmitter was moved from the attic of the Electrical Engineering Building to a small room in the same building known as "E. E. 110." The large flat-topped antenna was

continued in use. On the day the license was effective, June 16, the radiophone transmitter was ready for operation with a wave-length of 360 meters (831.9 kilocycles per second). License for 9YY was held, for experimental purposes only, until June 10, 1924.

During the summer of 1922 weather and market reports were broadcast daily. Concerts via phonograph records also went on the air three evenings a week. That September Frank J. Moles was employed to teach in the Department, and to operate WFAV. He continued with the programs already started. That fall Nebraska football games again were put on the air. A new radiophone transmitter was built during December, 1922, and January, 1923. Considerable of the radio equipment which had been used in another radio station at the Nebraska State Capitol was purchased by the Department, and was used in rebuilding the transmitter. WFAV thus was operated at 360 meters and 100 watts unmodulated power until October 9, 1923, at which time it was authorized to change frequency to 1090 kilocycles per second (275 meters), and to operate with 500 watts unmodulated power.

A carefully kept log of WFAV from February 5, 1923, to August 24, 1924, shows weather forecasts, road reports, news, time signals, and reports from Government health bulletins as daily offerings. Weekly programs included talks by University faculty members, and musical numbers supplied by the School of Fine Arts. The first University Charter Day to be broadcast was sent over KFXX, a considerably larger station located near Hastings, Nebraska. This program was transmitted over telephone wires from Lincoln.

Due to progress of experimentation it was possible to have two-way communication between Lincoln and distant broadcast stations. Mr. Moles recalls having

contacted WFAA (Dallas, Texas), WBAP (Fort Worth, Texas), WSB (Atlanta, Georgia), WMAQ and WGN (Chicago, Illinois), CFCB (Calgary, Alberta), CKCK (Regina, Saskatchewan), and many others. These conversations were carried on after midnight. This amateur and experimental work was continued during 1923-24, using 9YY as call letters. On two occasions, within a single night, continuous-wave-telegraph communications were carried on with stations in each of the nine United States radio districts. Telegraph signals were reported by listeners in England, Australia, and other distant points. At this time, these were truly remarkable achievements.

Except for the summer of 1923, when two Electrical Engineering students (W. P. Meyer '24 and H. J. Schrader ex-'23) carried on the work, Mr. Moles was in charge of both WFAV and 9YY. The latter was discontinued June 10, 1924. Another student (E. E. Plotts '28) was in charge of WFAV during the 1924 summer session. R. A. Cushman became an Electrical Engineering instructor in September, 1924, and took charge of the broadcast station. He continued sending out the daily reports previously begun, including weather forecasts, road reports, news items, health reports, and time signals. In addition, faculty members of the College of Agriculture gave daily talks over the station during 1924-25.

It should be noted that on June 13, 1924, a new license had been issued for operation of another experimental station, 9XBN. However, a very limited amount of experimental work was carried on, as this 9XBN was deleted November 2, 1925 — the life of this station being only four months and 19 days. Until September 15, 1925, programs were sent out daily over WFAV. After that date the University programs under this writer's direction were broadcast

over commercial station KFAB. WFAV was used to broadcast a musical program each Friday (midnight) until March 3, 1927, and the station was deleted on April 30 . . . slightly more than eight weeks later.

Twenty-two radio correspondence courses were broadcast for credit during the nine-year period from December 24, 1924, through the mid-term of 1932-33.²⁵ Presentation of these courses was made by six faculty members. There is no record of the number of students enrolled, as the broadcasts were primarily supplementary to the traditional extension work. Foreign languages were the most popular subjects.

Professor Theodore C. Diers, of the University of Nebraska, was the pioneer in the United States in the direction of chorus work by radio. In cooperation with the Nebraska State Department of Public Instruction, he broadcast four series of radio programs to one-room rural schools, under the title, "That Every Child May Sing." This new plan for teaching of music filled a long-felt need in the small schools, where but few of the teachers have had musical training. All reports at the time showed the results to be very gratifying. The children so trained brought music into their homes, schools, and communities. They were able to sing together most satisfactorily at county and even state fairs and similar functions.

The first of the series of eleven broadcasts began Wednesday, March 4, 1931, 4:00 to 4:15 p. m., over KFAB. The fourth and last of these series began September 14, 1933, and was heard at the same hour. There were eleven broadcasts . . . to correspond with the eleven songs in each series used for the state program. They were based on the book by Professor C. A. Fullerton, of Iowa State Teachers College, under title

²⁵ For a full account of these see Atkinson, *Radio Extension Courses Broadcast for Credit*, pp. 54-59.

of *One Book Course in Elementary and Selected Songs for Schools*. Teachers and pupils from all over the state went to nearby farmhouses which had radios, and each group . . . following the book and listening to the directions of Professor Diers . . . learned the songs in exactly the same way, no matter how far they might have been from the broadcasting studio in Lincoln. All pupils from the fourth to the eighth grades inclusive joined in the chorus. Later they sang together in one large group. The remarkable thing about this "state chorus" appearing on a program before thousands of listeners was that it had but one rehearsal together. Of course, the weekly lessons in themselves formed effective rehearsals.

Professor Diers used a phonograph or Victrola. He gave the directions just as a teacher would do in individual school. According to Professor Fullerton, Nebraska was leading the way in music teaching over the radio which, in the spring of 1931, was an absolutely new departure in radio work. The program was forced off the air because the station refused to give further time at 4:00 p. m., the best time for the school children to meet for this type of instructional work.

Dr. Atkinson describes another attempt to provide a classroom service as follows:

Beginning January 31, 1933, an experimental course in "Current Social Science" was offered to high schools, with the University allowing one-fourth unit credit toward entrance requirements for its successful completion. Broadcast on Mondays, 2:45 to 3:00 p.m., its material was prepared by Perry Van Miller, later Superintendent of Schools at Overton, Nebraska. There were sixteen broadcasts in this one series, which was not repeated because satisfactory time could not be secured for its presentation. A *Study Outline* was furnished each student at the beginning of a unit (e. g., four successive broadcasts on the "Rebuilding the Banks"). This included: bibliography, additional refer-

ences, radio presentations (i. e., the script), radio check lists, keys to radio check lists, unit test, and key to unit test.²⁶

KFAB became affiliated with the Columbia Broadcasting System on January 10, 1932. The network soon made demands for time, so that the former local KFAB services were gradually eliminated. Frequent changes in the University broadcast schedule resulted. Some programs were suspended, while others were postponed to a later time because of the right of way for network features. This prevented any further broadcasts to classrooms. These necessarily must be broadcast during the school day in order to fit into regular classroom schedules. KFAB disregarded established services, many of them having been established for a long time. Faculty members who had long been contributing their efforts and time on a non-paid volunteer basis naturally became dissatisfied with the new arrangements. In January, 1936, a half-hour period was cut to five minutes . . . and this was typical of many similar changes. The "Farmer's Half Hour" was cut to twenty minutes. Then, following a change in ownership, there were other eliminations. All afternoon programs were dropped, the reason being given that University material did not fit the broadcasting policy of the station.

A special committee of the University was appointed to consider the type of program demanded and the possibility of establishing better relations with the station management. On September, 13, 1937, KFAB reported that the "Farmer's Half Hour" period had been sold, but that a ten-minute period would be available at 1:15 p. m., or the University could have an earlier morning broadcast from 6:00 to 6:30 a. m. The College of Agriculture Faculty refused this substi-

²⁶ Atkinson, *Broadcasting to the Classroom by Universities and Colleges*, pp. 68-9.

tution, and suspended its program entirely. The station continued the weather report, but even this was subjected to many changes . . . making it of little use to farmers.

In January, 1939, the University completed a new, up-to-date studio with full modern equipment including a double turntable recording instrument. Transcriptions have been sent to many of the smaller stations, and there have been occasional "live" program series over both KFAB and KFOR, Lincoln's two standard broadcast stations. It is the general feeling on the campus that there will be no more general broadcasting by the University of Nebraska unless there should be a special broadcast band established for educational institutions.

Nebraska State Teachers College at Wayne (then Wayne State Teachers College) held license to operate a standard broadcast station jointly with a local citizen for two years and two days between August 24, 1926, and August 25, 1928. Dr. S. A. Lutgen, of the Wayne Hospital, had secured this license originally, and had sold a half-interest to the College. Several types of programs were attempted, but financially it was a "white elephant." Hence, the station was sold and consolidated with a Norfolk, Nebraska, commercial station. For a period of time remote broadcasting was carried over this Norfolk station, WJAG, but this practice proved to be so expensive that it was discontinued.

* * *

Getting away from Nebraska's established institutions of learning, a fair history of radio pioneering necessarily should include a typical record of the part played by young boys in experimentation. Many colleges and universities report how these curious youngsters edged into laboratories, and how their spasmodic results were often of such importance that physics

departments frequently took over their play-pieces and assigned more mature scientific workers to carry on and extend what originally had been merely crude amateur efforts. A typical example of this development at Lincoln, Nebraska, will serve to illustrate this point.

Donald A. Reed, a Junior in Lincoln High School, feverishly began experimentation in 1922. Like many other "hams," he started with a home-constructed crystal set with which he could listen to a few of the stations then on the air. He used a Quaker Oats box bound with wire, using a movable contact point which he pushed across the bare wire to extend or shorten the wave length. He would scratch a piece of galena with a "cat's whisker" to find the sensitive spot for reception. A condenser and a pair of earphones completed the receiving set. After this initiation into the exciting mysteries of radio waves, with power to furnish either music or voice from broadcasting stations, or with constant chatter of dots and dashes from amateur sending sets or ships at sea, it wasn't very long before he became determined to learn the radio code and to understand fully the meaning of these dots and dashes. Then he talked his father into purchasing the equipment necessary for the transmission of radio.

Using a pattern supplied by another enthusiast, he built and erected a 50-foot wooden tower. A deep base of concrete was prepared to provide for safe anchorage of so high a tower in windy Nebraska. He constructed a four-wire 100-foot antenna of about 9-foot spread. A heavy steel pole properly attached to the front of a two-story house provided the other anchorage, and a lead-in connected the antenna with his equipment. His father bought him a 1-kilowatt transformer, plus other necessary parts . . . and that made possible the first sending set. All the lights for

blocks around blinked every time the key was pressed. The neighbors, naturally, were not pleased and there was considerable local objection. But the boy persisted, secured a radio license, and joined the American Radio Relay League.

Youthful Donald then built his first audio-tube receiving set including, among other parts, tubes costing about eight dollars each. Today, they can be bought for sixty or seventy cents each. There followed a period spent mostly in building up and tearing down various sets, trying out different hook-ups, and swapping parts and ideas with other boys who had the same "bug." While ready-made receiving-and-sending sets, of course, could be purchased, it is part of the "amateur code" to purchase the various parts and to construct one's own equipment. It was thus that amateurs gained most in knowledge of radio and, in a few cases, were able to contribute so much to the development of professional radio. Many of the present-day improvements are, in fact, traceable either directly or indirectly to the earlier discoveries made by these "hams" in the course of their experimentation.

It was after he made his first 10-watt tube short-wave sending set, which required a direct-current generator, that amateur radio work meant the most to him. With that set he could reach out all over the country, and talk with hundreds of other "hams" by code. It was during this period that he fell so far behind in his school work that he came near being "kicked out of school" because of poor scholarship. The best time for sending seemed to be late at night, especially from three to six in the morning, for getting contact with Pacific Coast operators. Many hours of sleep were lost in sending out calls and then listening for the response, especially from distant stations. Most of this dot-and-dash conversation consisted of

telling each other how loud the signals were coming in. New hook-ups and variations in adjustment of equipment would be experimented on, using other amateurs to confirm the success or failure of the changes by comparison of new range set or quality of tone signals.

Another special purpose was to persuade distant stations to exchange a card acknowledging the contact, so as to be able to prove the range of the station. A map of the American continent in the office gradually became dotted with pins showing points of contact. Much of the time was spent in relaying messages to other "hams." These, passed from station to station, were usually not of much importance in themselves, but were sources of great satisfaction and excellent practice. Friends of amateurs sent greetings to relatives, sweethearts, and the like. All were treated as if they were "messages to Garcia." Every effort was made to keep them moving toward final destination.

This youngster, like so many others of his age, dropped out of the game when radical changes came to ultra-short wave-lengths. To continue would have meant to build up practically new equipment. He had since entered college, and found his time absorbed by other activities. In retrospect, his chief memento of these "ham" days is a letter from the Federal Communications Commission dated July 21, 1942, which reports Amateur Radio Station W-9AHV as being issued to Donald A. Reed, 1251 South 27th Street, Lincoln, Nebraska, as Amateur 1st #20-336. Many young amateurs used this early experience as a stepping-stone in making radio, or one of its closely related fields of endeavor, a career in later life. Many leading figures in the field of radio today can trace their beginnings to youthful periods as radio "hams."

* * *

In the fall of 1934 many farmers, hard hit by drouth and depression, were having their telephones

removed.²⁷ The Lincoln Telephone and Telegraph Company suffered a decided loss in revenue, and was left with a great deal of idle equipment. It occurred to some one among the company officials that a rural program service . . . similar to that afforded business and industrial plants in the city . . . could be provided at a nominal cost. As an experiment, magnetic speakers were installed in a dozen or more farm houses, most of them in the vicinity of Arbor, north of Lincoln. The promoters decided to expand the plan by providing an educational program for rural schools and homes. A conference was held that included R. S. Brewster of the Telephone Company, State Superintendent Charles W. Taylor, County Superintendent J. J. Correll, and this writer as the Director of the University Extension Division. Plans were discussed for a state-wide hook-up. Superintendent Correll made an educational talk over the experimental line on January 24, 1935. This service was maintained, free of cost to the patrons, for about three months until it became evident that the cost would be more than patrons could afford. Extension of rural electrification, with increase in radio receivers in farm houses, made the service somewhat superfluous, so the plan was abandoned.

NORTH DAKOTA

North Dakota, so far as radio education is concerned, has been especially noteworthy in that so many of the public school systems in its smaller cities have

²⁷ These data are based on personal interviews held by J. S. Robinson, Research Assistant, with County Superintendent J. J. Correll, R. S. Brewster, General Traffic Superintendent of the Lincoln Telephone and Telegraph Company, and the author of this book.

carried on such extensive plans of broadcasting. Dr. Atkinson included four North Dakota cities in his 1939 study of 126 American public school systems—a far greater proportion than this state's population would seem to warrant.²⁸ In *Bismarck*, program series have included various phases of school work such as music, industrial arts, better speech, athletics, and similar activities. One year (1937-38) in historical sketches called "Stories Out of North Dakota's Past," teachers were assigned to write the scripts, two of them being held responsible for each topic. *Fargo* has used many children in its programs over a series of years, and the fact that a record number of voters turned out for a school bond election was credited to this broadcasting activity.

In *Grand Forks* the Central High School began broadcasting almost daily series of programs in 1932, which have included high school news, drama societies, and Parent-Teacher Association programs. One reason for this unusual amount of broadcasting activity has been the location of the University of North Dakota radio station on the outskirts of the city. *Minot* was one of the first American cities, if not the first, to make extensive comprehensive use of toy microphones in its elementary schools for the purpose of encouraging better language habits. This has been reported as being a means of strong motivation in the speech work of the younger children.

* * *

Three educational institutions have held standard broadcast licenses: North Dakota Agricultural College, State Teachers College at Mayville, and the University of North Dakota. Only the last-named is in operation in 1943.

²⁸ Atkinson, *Development of Radio Education Policies in American Public School Systems*, See pp. 258-9, 216-7, 238-9, 244.

North Dakota Agricultural College held license to operate its own station for a period of four years, four months, and 26 days, between December 14, 1922, and May 9, 1927. In 1925—prior to the 1927 deletion—the College station was taken over commercially, and for the next six years broadcasting time was purchased at a special rate. Since that time, about 1931, continuous daily fifteen-minute programs have been prepared and presented over WDAY (Fargo). Time for educational broadcasting now is provided free by this station. Hampered by restricted facilities and funds for this type of work, a radio service nevertheless has been maintained by the College consistently from the beginning.

Programs presented have evolved from long fifteen-minute talks by staff members to a more modern news-style broadcast at the present time. These programs, sponsored by the North Dakota Extension Service, now cover a wide range of farm interests in brief newsy style. As little detailed information as possible is broadcast, but rather the attempt is made to interest listeners and to stimulate their desire for information. The source of complete information always is emphasized.

The Extension Service maintains regular transcribed and mimeographed script programs of a similar nature over all eight stations in the state. Transcribing programs as a means of bringing the College more directly to the people was started in 1936 over KFYR (Bismarck). It later was developed to include other stations. Mimeographed fifteen-minute programs have been issued to other North Dakota stations.

Another important phase of the North Dakota educational radio plan has been the development of a policy of broadcasting local programs by county extension agents. These workers have presented from one to

six daily broadcasts each week. In two counties microphones have been installed in the county extension offices so that daily broadcasts may be originated there. Much additional encouragement has been given to stimulate farm broadcasts and to bring farm people into radio programs. By means of portable transcribing equipment, programs frequently have been arranged to depict farmers at work on their farms.

State Teachers College, at Mayville, held a standard broadcast license for a period of four months and 27 days between January 19, 1923, and June 15, 1923. A member of the College faculty had equipped a small station on the campus and had been sending out messages as early as 1921. Also, he offered a course in radio in which a large number of students were reported as enrolled. The students purchased their own equipment and constructed their own receiving sets. However, when attempts were made to broadcast programs, there were numerous complaints to the College administration. It, therefore, was deemed sensible to drop the station . . . especially as it was impossible to get sufficient state appropriations to continue the venture.

University of North Dakota operates its own station, KFJM (Grand Forks), receiving the initial license on August 13, 1923. This was a development from the pioneer work of Professor A. H. Taylor (head of the Department of Physics until late in 1917 when he resigned to enter the United States Naval Service) who broadcast weather reports in Morse code. It was on March 11, 1917, that Professor Taylor first transmitted voice and music to a listening audience. Later he carried on a conversation with Columbia University experimenters in New York City. This is claimed to have been the first long-distance transmission of voices by radio in the United States.

The World War caused cessation of radio activities, and it was not until 1923 that the University again entered the field. In the spring of that year certain faculty members, feeling that radio had a promising future in providing an excellent means of furthering education, were successful in their attempt to have the University purchase a local 100-watt station. The formal opening of this University-owned station took place on October 22, 1923, with a program consisting of several numbers by the University Band, a talk under title of "The University Broadcasting Station and Its Purpose" by Professor D. R. Jenkins, head of the Department of Electrical Engineering, some vocal solos, and another talk by Dr. Thomas F. Kane, then president of the University.

Dr. O. G. Libby's "Story Telling Hour" was an important feature during the first years of KFJM broadcasting. The work of Mrs. Jane Gavere in promoting and directing programs was one of the main features in making the first year of broadcasting successful. A typical schedule of these early broadcasting days was that of December 5, 1923:

7:00-7:30 p. m.	Story Telling Hour—Indian stories by Dr. O. G. Libby
7:30-7:45 p. m.	Weekly News Review—Mrs. Jane Gavere
9:00-9:45 p. m.	General Program—four vocal solos— three piano solos—Talk, "What to Eat and Why"

The care, operation, and development of the technical side of the broadcasting were left to the Department of Electrical Engineering. A radio committee was appointed consisting of: J. W. Wilkerson, Business Manager; C. L. Ellis, Superintendent of Buildings and Grounds; Dr. K. H. Fussler, head of the

Physics Department; A. H. Yoder, Director of Extension; and Professor D. R. Jenkins, head of the Electrical Engineering Department. This committee controlled the policies of the station besides arranging and supervising the programs.

As radio became more popular, the number of programs were increased. In order to offset the increasing operating expenses, broadcasting time in 1929 was rented to a commercial group in the city of Grand Forks. This arrangement had been continued until 1942 when separate call letters were authorized for the commercial station. An important milestone was reached when the modern studios were constructed in 1933. With these added facilities and an increase in power to 1,000 watts, KFJM became one of the best-equipped stations in its section of the United States at that time.

A unique KFJM broadcast was the first debate via the air in March, 1939, between Concordia College and the University of North Dakota. The Concordia debaters were in the studio of WDAY (Fargo) while the University team was in the Grand Forks campus studio. The program was switched from one city to the other four times during the debate. Both stations transmitted the program throughout the half-hour, the originating studio sending it over a leased telephone line to the transmitter of the other station, thus giving simultaneous transmission. This particular broadcast received much favorable comment throughout the listening areas of both stations.

The present organization for radio work at the University of North Dakota consists of a committee composed of the business manager, faculty members from the Electrical Engineering, Music, Physics, Education Departments, and the chief engineer of KFJM. This group formulates general policies and takes care of business matters.

Broadcasts originating on the campus are in charge of a student program manager. Under him is a student program director. These two make all program arrangements and have under them student announcers and directors of each program series. They are responsible for the broadcasts and must answer for their success to Dr. J. V. Breitwieser, Dean of Education. Any new programs or other important changes are approved by him. Dr. John C. West, President of the University, has the final authority in decisions on important questions affecting policies.

A program series, originated in 1936, has had some classroom use, although not primarily intended for that purpose.²⁹ This has been the "Music Appreciation Hour," as conducted by Professor Hywel C. Rowland, Head of the Music Department, who plays recorded music with verbal interpretations. Experimentation with the production of programs definitely intended for classroom use was attempted in 1939-40, but these were not entirely successful because of lack of financial backing. Many programs have been designed for general public education, not specifically for one group. "Science from the Sidelines" and "Health Talks" are typical. Broadcasts of the University convocations are special features of this adult-education program.

Public relations offerings have consisted of sports broadcasts; a weekly "Variety Hour" featuring campus talent from all fields of music and dramatics; a weekly interview of a faculty member; a Y. W. C. A.-sponsored program consisting of poems and philosophy rendered with a background of organ music; and fraternity programs. Remote broadcasts are made of various campus activities, such as the "Homecoming

²⁹ Atkinson, *Broadcasting to the Classroom by Universities and Colleges*, pp. 117-8.

Program" and University dances. Dramatic presentations of the University Radio Playmakers, a campus group, give valuable experience to members in radio plays and dramatic sketches. In fact, the entire staff of the campus studio is composed of students who thereby gain much experience in all phases of broadcasting.

Publicity for the broadcasts has consisted of stories and schedules printed in the campus and local newspapers, bulletins sent to high schools, and daily announcements over the air concerning coming programs. A student staff directs the distribution of this publicity, a member of the School of Journalism usually being assigned to this task by the program manager.

SOUTH DAKOTA

South Dakota, so far as radio education is concerned, is distinguished by the fact that three of its more important state-supported educational institutions operate standard broadcast stations: South Dakota State College of Agriculture and Mechanic Arts, South Dakota State School of Mines, and the University of South Dakota. Two other privately endowed colleges at one time held such authorization: New Columbus College (now out of existence) and Yankton College.

* * *

The South Dakota Department of Public Instruction received nation-wide publicity in 1931 when it proposed for itself an extensive state-wide use of radio broadcasting in connection with supervision in the rural schools. This plan was a "brain child" of E. C. Giffen, then State Superintendent, and theoretically it sounded like the beginning of a genuine service. It was proposed

to work out through the Department in coöperation with the University of South Dakota, South Dakota State College, and particularly with the four state teacher training institutions a broadcasting plan in which the Department would have a transmitter and each county superintendent receiving sets for messages. Thus, educational leaders throughout the state would be able to present their ideas over a wide area. Further, it was expected that the South Dakota Young Citizens League would install sets in the rural schools. This plan of radio supervision, however, did not materialize beyond the installation of receiving sets in some of the offices of the county superintendents. Apparently it failed through lack of adequate financial support.

* * *

Dr. Atkinson, in his study of 126 public school systems, included two South Dakota cities.³⁰ As early as 1935 it was decided to use a student announcer in *Aberdeen*. These pupils write their own scripts, contact all persons scheduled to go on the broadcasts, and submit all materials to members of the faculty radio committee that determines policies. Broadcasting by the school system in *Watertown* began in 1933. At first most of these broadcasts were directed primarily by the interested faculty members. In 1937, however, a Radio Club was organized formally as a school activity, and this group has been responsible for subsequent broadcasts. It was discovered that broadcasting of football games by this Radio Club tended to increase attendance at the games.

* * *

New Columbia College, at Sioux Falls, held standard broadcast license for five months and 27 days between December 17, 1923, and June 13, 1924. There

³⁰ Atkinson, *Development of Radio Education Policies in American Public School Systems*, pp. 242-4, 261-2.

is no record of the type of broadcasting, if any, as the institution is no longer in existence.

South Dakota State College of Agriculture and Mechanic Arts operates its own station, KFDY (Brookings), having received the initial license on March 9, 1923. At that time there were few restrictions on broadcasting, and the station operated on irregular schedule. Usually it broadcast the assembly exercises each Tuesday and Thursday from 11:00 a. m. until noon. This was followed by a thirty-minute period of news, weather, and market information. Bernell Bidne, an engineering student, was the first operator of the station. Under direction of Dr. B. B. Brackoff, he constructed its first transmitter and did much of the announcing in the beginning until he was relieved from these duties by another engineering student. Soon there was added to the program schedule the broadcasting of athletic events, concerts, and music from the campus dances. All these programs were arranged under the direction of a faculty committee.

By 1926 a fairly definite schedule of broadcasts had been established. During the summer months of 1931, KFDY was on the air for a very limited amount of time. Its equipment was old and in poor condition. Arrangements were made that August by which the South Dakota State College Extension service should employ a man to handle the program arrangements and to do the announcing, with the College itself furnishing and operating the equipment. Sam Reck, Jr., Extension Service Editor, took over program planning and announcing on September 1, 1931, handling these assignments until November 1 of that year. Then, S. W. Jones was employed to spend half his time arranging programs and announcing while using the other half of his services in rural organization work for the Extension Service.

Since April 13, 1934, KFDY has operated under a license specifying definite hours—using the 12:30 to 2:00 p. m. period regularly, with occasional extra time for special broadcasting. Approximately forty programs are broadcast each week with the schedule centering principally around the needs of farm areas. Weather, market, and farm flashes are daily events with a variety of other programs being given during a typical week. Interests of the homemakers are met by such features as "Housekeeper Chats," and talks by nutrition, clothing, and home economics leaders. In its services via radio to the farming interests, South Dakota State College cooperates with the United States Department of Agriculture.

Campus activities are represented by musical and other types of programs. Sigma Delta Chi fraternity has presented a weekly "College News Service." Faculty members offer talks on subjects in which they are specialists. At times a high school home economics club has presented a weekly program. The 4-H Club has offered a thirty-minute Saturday afternoon program, usually with some prominent speaker and musical numbers. "Vocational Problems" and "Soil Science" also have been weekly features. In the summer of 1937 a recording machine was purchased, thus permitting many of the station's best programs to be sent on records to commercial stations both in and outside of South Dakota just as their time schedules may permit.

South Dakota State School of Mines operates its own station, WCAT (Rapid City), having received the initial license May 9, 1922. A spark-transmitting set had been installed on the campus in 1913 at a period when it was necessary that arrangements of time for transmitting be made in advance by mail so that the two operators could sit at their respective sets to tick off messages. After a period of inactivity dur-

ing the World War, new equipment was purchased. The initial license was for the transmission of weather reports only, in accord with the United States Weather Bureau schedule. Installed and operated by members of the Electrical Engineering Department, these weather forecasts were broadcast twice daily. Another period was set aside during which special storm warnings might be put on the air.

Under a new license issued during the winter months of 1922-23, there was begun the broadcasting of entertainment features. J. C. Burnside and S. D. Gregory (then undergraduates and later officials of the Department of Radio Engineering of the Westinghouse Electric Company) were principally responsible during 1925-26 for the development of a definite WCAT broadcasting service. The station is now on the air daily except Sunday from 11:00 a. m. to 1:00 p. m. Programs consist principally of weather reports, news releases, dramatic and musical offerings by campus groups, and addresses by both faculty and students.

University of South Dakota operates its own station, KUSD (Vermillion), having received the initial license on February 6, 1923. Establishment of the broadcasting station followed considerable previous amateur and experimental work in wireless communication, for the date of beginning of which there now is no definite record. Actual broadcasting was begun over experimental station, 9YAM, in May, 1922 — approximately nine months before broadcast license was issued. Ernest Lawrence (then an undergraduate in the University and later in the Research Division of the University of California) was principally responsible for the early development of WCAT (changed to KTUSD effective October 7, 1925). Throughout the history of the station, the physical equipment has been made in the shops and laboratories of the University. The parts purchased have been assembled by indi-

viduals connected with the institution. Likewise, most of the developmental work has been done under purely voluntary conditions for which no direct compensation has been granted.

Program material in the earlier years consisted principally of intercollegiate debates, play-by-play reports of athletic contests, musical recitals by faculty and students of the College of Music, addresses by faculty members and prominent visitors to the campus, student musical organizations, and similar features. These early broadcasts were confined almost entirely to evening hours. On November 10, 1928, KUSD was ordered to divide time on its frequency with two commercial stations. This arrangement is in effect today. KUSD broadcasts regularly seven days of the week from 3:00 to 5:30 p. m. during the academic year, with the privilege of broadcasting special events at other hours by giving a two-week advance notice of the specific time needed.

Typical program series have been: "Business Trends," foreign news digests, "County Historical Series," "Children's Hour," "Parent's Forum," programs by county schools, vespers services, music and dramatic presentations by students in the Vermillion High School, and travelogues.

G. Russell Bauer, Director of Information, explains an unusual method of publicity as follows:

On this broadcasting schedule, each faculty member of the University is asked to present one 20-minute talk covering phases of his field which are of general interest and which have educational value. In publicizing these talks, we mail out to all South Dakota newspapers "will say" articles, outlining the main parts of the speeches. Their use in South Dakota newspapers is quite general.

Our reason, of course, for sending the "will say" type of article is that persons who are interested in the news stories will then have an opportunity to listen to the speeches if

they so desire. For instance, if one of our men will speak on Wednesday night, we release the news story so that it will appear in the newspapers on Wednesday afternoon.

In 1935 a new studio was built on the fourth floor of the Student Union Building, covering a space about forty by sixty feet. Room rental and power for operating the transmitter have not been charged as operating costs against the station because it has no funds with which to pay. W. H. Jordan, Professor of Physics, acts without any extra compensation as chief engineer and operator. Students under the National Youth Administration and other self-help funds have received employment in the operation of KUSD. Mr. Bauer, as Director of Information Service, acts as chief announcer, being assisted by students from the Speech Department, who receive a small compensation for their time. This is charged against the funds of the Publicity Department.

Yankton College held license to operate its own station for a period of four months and 25 days between August 8, 1922, and January 2, 1923. This brief period of station operation was part of a development that was begun with the organization of a Radio Club in the summer of 1920. Dr. Gregg Evans was its faculty advisor. Charter membership included: Rufus Bauer, Willard Eymer, Homer Fitch, Clayton Klise, and Richard Stuelpnagel. Members joining later were: Harold Hacker, Paul Hohf, and Elmer Jueklo. The Radio Club was organized when these young men conceived the idea of a powerful transmitter and receiver, rather than their several individually owned smaller sets. They pooled their funds with that idea in mind. Equipment costing several hundred dollars was purchased, and installation was begun in the south-east corner room on the third floor of Ward Hall.

This Radio Club functioned independently for a two-year period, when it gradually dissolved. Equipment then became the property of the College. The Administration allowed the station idea to die out, feeling that it did not have sufficient funds to develop it into a worth while project. Signals from the transmitter were reported as interfering with telephone connections as well as disrupting the regular instructional services of the College. No renewal of license was sought. No regular broadcasting was carried on by Yankton College until 1931 when the present policy was initiated. This radio work is now under the direction of a faculty committee. Broadcasting is done by remote control from the campus studios, which have been rebuilt for better production of dramatic programs.

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